

FIGURE 1

DATABASE RECORDS:

Customer Id: c1500

First: Joe
Last: Smith
City: San Diego
Email: joesmith@company.com
Phone: (555) 555-5555
Fax: (555) 551-5555

Customer Id: c1600

First: John
Last: Smith
City: San Diego
Email: johnsmith@company.com
Phone: (555) 552-5555
Fax: (555) 553-5555

FIGURE 2

CUSTOMER.DTD

```
300  { <!ELEMENT CUSTOMER  
      (customer_name+, email*, phone*, fax?)>  
302  {   <!ATTLIST CUSTOMER customer_id ID #REQUIRED>  
        <!ATTLIST CUSTOMER city #REQUIRED>  
        <! -- ? = zero or one; * = zero or more; + = one or more --->  
304  {     <ELEMENT customer_name (first+, last+)>  
        <ELEMENT first (#PCDATA)>  
        <ELEMENT last (#PCDATA)>  
306  {       <ELEMENT email (#PCDATA)>  
        <ELEMENT phone (#PCDATA)>  
        <ELEMENT fax (#PCDATA)>
```

FIGURE 3A

:

XML DOCUMENT:

```
308  { <?xml version="1.0" standalone="no"?>  
310  {   <!DOCTYPE CUSTOMER SYSTEM "customer.dtd">  
312  {     <CUSTOMER customer_id="c1500" city="san diego">  
312  {       <customer_name>  
314  {         <first>Joe</first>  
314  {         <last>Smith</last>  
312  {       </customer_name>  
316  {         <email>joesmith@company.com</email>  
316  {         <phone>(555) 555-5555</phone>  
310  {         <fax>(555) 555-5555</fax>  
310  {     </CUSTOMER>
```

FIGURE 3B

400 { <?xml version="1.0" standalone="yes"?>
<!DOCTYPE CUSTOMER
[
<!ELEMENT CUSTOMER
(customer_name+, email*, phone*, fax?)>
<!ATTLIST CUSTOMER customer_id ID #REQUIRED>
<!ATTLIST CUSTOMER city #REQUIRED>
<! -- ? = zero or one; * = zero or more; + = one or more --->
<ELEMENT customer_name (first+, last+)>
<ELEMENT first (#PCDATA)>
<ELEMENT last (#PCDATA)>
<ELEMENT email (#PCDATA)>
<ELEMENT phone (#PCDATA)>
<ELEMENT fax (#PCDATA)>
]>

402 {
404 { <CUSTOMER customer_id="c1500" city="san diego">
<customer_name>
<first>Joe</first>
<last>Smith</last>
</customer_name>
<email>joesmith@company.com</email>
<phone>(555) 555-5555</phone>
<fax>(555) 555-5555</fax>
</CUSTOMER>

FIGURE 4

XML DOCUMENT (INPUT DATA):

```
<sales>  
  <division id="North">  
    <revenue>10</revenue>  
    <growth>9</growth>  
    <bonus>7</bonus>  
  </division>  
  
  <division id="South">  
    <revenue>4</revenue>  
    <growth>3</growth>  
    <bonus>4</bonus>  
  </division>  
  
  <division id="West">  
    <revenue>6</revenue>  
    <growth>-1.5</growth>  
    <bonus>2</bonus>  
  </division>  
  
</sales>
```

FIGURE 5

XSL STYLE SHEET:

```
<html xsl:version="1.0"
      xmlns:xsl="http://www.w3.org/1999/XSL/Transform"
      lang="en">
  <head>
    <title>Sales Results By Division</title>
  </head>
  <body>
    <table border="1">
      <tr>
        <th>Division</th>
        <th>Revenue</th>
        <th>Growth</th>
        <th>Bonus</th>
      </tr>
      <xsl:for-each select="sales/division">
        <!-- order the result by revenue -->
        <xsl:sort select="revenue"
                  data-type="number"
                  order="descending"/>
        <tr>
          <td>
            <em><xsl:value-of select="@id"/></em>
          </td>
          <td>
            <xsl:value-of select="revenue"/>
          </td>
          <td>
            <!-- highlight negative growth in red -->
            <xsl:if test="growth < 0">
              <xsl:attribute name="style">
                <xsl:text>color:red</xsl:text>
              </xsl:attribute>
            </xsl:if>
            <xsl:value-of select="growth"/>
          </td>
          <td>
            <xsl:value-of select="bonus"/>
          </td>
        </tr>
      </xsl:for-each>
    </table>
  </body>
</html>
```

FIGURE 6

HTML OUTPUT:

```
<html lang="en">
<head>
<meta http-equiv="Content-Type" content="text/html; charset=iso-8859-1">
<title>Sales Results By Division</title>
</head>
<body>
<table border="1">
<tr>
<th>Division</th><th>Revenue</th><th>Growth</th><th>Bonus</th>
</tr>
<tr>
<td><em>North</em></td><td>10</td><td>9</td><td>7</td>
</tr>
<tr>
<td><em>West</em></td><td>6</td><td style="color:red">-1.5</td><td>2</td>
</tr>
<tr>
<td><em>South</em></td><td>4</td><td>3</td><td>4</td>
</tr>
</table>
</body>
</html>
```

FIGURE 7

{PRIVATE} ____NARA_article_begin____:

Path: news.sdsc.edu!newshub.csu.net!newshub.sdsu.edu!newsfeed.berkeley.edu!
news.cis.ohiostate.edu!news.rootsweb.com!rootsweb-gw

From: Casivers@aol.com

Newsgroups: soc.genealogy.hispanic

Subject: Passenger Lists for Ships from Spain To Cuba

Date: 22 Mar 1999 16:20:37 -0800

Organization: RootsWeb Genealogical Data Cooperative

Lines: 7

Message-ID: <2376321.36f6de03@aol.com

NNTP-Posting-Host: localhost

Mime-Version: 1.0

Content-Type: text/plain; charset=US-ASCII

Content-Transfer-Encoding: 7bit

X-Trace: bl-1.rootsweb.com 922148437 3147 127.0.0.1 (23 Mar 1999 00:20:37 GMT)

X-Complaints-To: usenet@news.rootsweb.com

NNTP-Posting-Date: 23 Mar 1999 00:20:37 GMT

Xref: news.sdsc.edu soc.genealogy.hispanic:3156

Does anyone know where I can get passengers lists for
ships that transported Spaniards to Cuba circa 1860's?

Any help would be appreciated.

Thanks,

Cheryl Sanchez-Sivers

____NARA_article_end____:

FIGURE 8

```
<!ELEMENT rfc1036_mesg (headers, body)>
<!ELEMENT headers (required_headers, optional_headers, other_headers)>
<!ELEMENT body #PCDATA>

<!ELEMENT required_headers (From, Date, Newsgroups, Subject, Message-ID, Path)>
<!ELEMENT optional_headers (Followup-To?, Expires?, Reply-To?, Sender?, References?, Control?, Distribution?,
                           Keywords?, Summary?, Approved?, Lines?, Xref?, Organization?)>
<!ELEMENT other_headers other+>

<!ELEMENT From          #PCDATA>
<!ELEMENT Date          #PCDATA>
<!ELEMENT Newsgroups    #PCDATA>
<!ELEMENT Subject        #PCDATA>
<!ELEMENT Message-ID    #PCDATA>
<!ELEMENT Path          #PCDATA>

<!ATTLIST From    seqno CDATA #REQUIRED>
<!ATTLIST Date    seqno CDATA #REQUIRED>
<!ATTLIST Newsgroups seqno CDATA #REQUIRED>
<!ATTLIST Subject  seqno CDATA #REQUIRED>
<!ATTLIST Message-ID seqno CDATA #REQUIRED>
<!ATTLIST Path     seqno CDATA #REQUIRED>

<!ELEMENT Followup-To #PCDATA>
<!ELEMENT Expires     #PCDATA>
<!ELEMENT Reply-To    #PCDATA>
<!ELEMENT Sender       #PCDATA>
<!ELEMENT References  #PCDATA>
<!ELEMENT Control     #PCDATA>
<!ELEMENT Distribution #PCDATA>
<!ELEMENT Keywords    #PCDATA>
<!ELEMENT Summary     #PCDATA>
<!ELEMENT Approved    #PCDATA>
<!ELEMENT Lines        #PCDATA>
<!ELEMENT Xref         #PCDATA>
<!ELEMENT Organization #PCDATA>

<!ATTLIST Followup-To  seqno CDATA #REQUIRED>
<!ATTLIST Expires     seqno CDATA #REQUIRED>
<!ATTLIST Reply-To    seqno CDATA #REQUIRED>
<!ATTLIST Sender      seqno CDATA #REQUIRED>
<!ATTLIST References  seqno CDATA #REQUIRED>
<!ATTLIST Control     seqno CDATA #REQUIRED>
<!ATTLIST Distribution seqno CDATA #REQUIRED>
<!ATTLIST Keywords    seqno CDATA #REQUIRED>
<!ATTLIST Summary     seqno CDATA #REQUIRED>
<!ATTLIST Approved    seqno CDATA #REQUIRED>
<!ATTLIST Lines        seqno CDATA #REQUIRED>
<!ATTLIST Xref         seqno CDATA #REQUIRED>
<!ATTLIST Organization seqno CDATA #REQUIRED>

<!ELEMENT other  #PCDATA>

<!ATTLIST other
  keyword  CDATA #REQUIRED
  seqno   CDATA #REQUIRED>
```

FIGURE 9

```
create table ngrps_headers_core (
    internalMsgId    integer    not null,
    FromInfo        varchar(200) not null,
    MsgDate         varchar(50)  not null,
    Newsgroups      varchar(1900) not null,
    SubjectInfo     varchar(1900) not null,
    MessageId       varchar(200)  not null,
    PathInfo        varchar(1900) not null,
    FollowupTo      varchar(1900),
    ExpiresOn       varchar(50),
    ReplyTo          varchar(200),
    SenderInfo      varchar(200),
    ReferencesInfo  varchar(1900),
    ControlInfo     varchar(1900),
    DistributionInfo varchar(500),
    KeywordsInfo    varchar(1900),
    SummaryInfo     varchar(1900),
    ApprovedInfo    varchar(500),
    LinesOfEmail    integer,
    XrefInfo         varchar(500),
    OrganizationInfo varchar(500),
    FromSeqNum      integer,
    MsgDateSeqNum   integer,
    NewsgroupsSeqNum integer,
    SubjectSeqNum   integer,
    MessageIdSeqNum integer,
    PathSeqNum      integer,
    FollowupToSeqNum integer,
    ExpiresSeqNum   integer,
    ReplyToSeqNum   integer,
    SenderSeqNum    integer,
    ReferencesSeqNum integer,
    ControlSeqNum   integer,
    DistributionSeqNum integer,
    KeywordsSeqNum  integer,
    SummarySeqNum   integer,
    ApprovedSeqNum  integer,
    LinesSeqNum     integer,
    XrefSeqNum      integer,
    OrganizationSeqNum integer,
    primary key (internalMsgId),
    unique (MessageId,MsgDate)
);

create table ngrps_headers_othr (
    internalMsgId    integer    not null,
    HdrKeyName       varchar(50),
    HdrKeyValue      varchar(2000),
    HdrKeySeqNum     integer,
    foreign key (internalMsgId) references ngrps_headers_core (internalMsgId)
);

create table container_info (
    internalId       integer    not null,
    data_id          integer    not null,
    posInContainer   integer,
    sizeOfMsg        integer,
    foreign key (internalId) references ngrps_headers_core(internalMsgId),
    foreign key (data_id) references MDAS_AD_REPL(data_id)
);
```

FIGURE 10

FORMATTED MESSAGE USING XML DTD

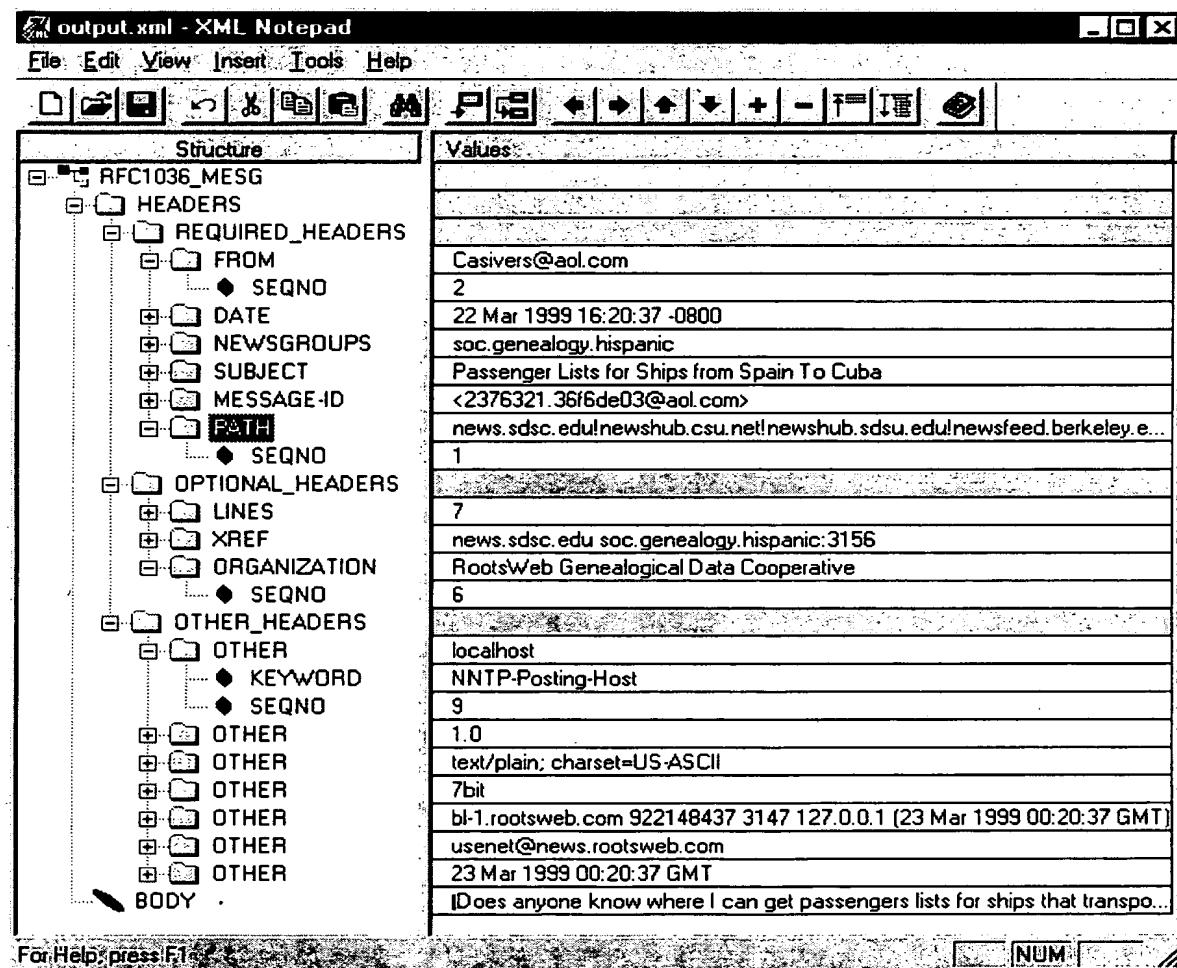


FIGURE 11

WEB-BASED INTERFACE FOR ACCESSING THE E-MAIL COLLECTION.

MCAT-SRB A Data Integration System - Microsoft Internet Explorer

File Edit View Favorites Tools Help

Back Forward Stop Refresh Home Search Favorites History Mail Print Edit

Address http://sib.npac.edu/ Go Links

Attribute Names

mcatcore.data.name	=	<input type="button" value="Get Attribute Values"/>
mcatcore.data.collection.name	=	<input type="button" value="Get Attribute Values"/>
newsgroups.posInContainer	=	<input type="button" value="Get Attribute Values"/>
newsgroups.sizeOfMsg	=	<input type="button" value="Get Attribute Values"/>
newsgroups.MessageId	=	<input type="button" value="Get Attribute Values"/>
newsgroups.FromInfo	=	<input type="button" value="Get Attribute Values"/>
newsgroups.MsgDate	like	7 Jan 199
newsgroups.Newsgroups	=	<input type="button" value="Get Attribute Values"/>
newsgroups.SubjectInfo	=	<input type="button" value="Get Attribute Values"/>
newsgroups.SenderInfo	=	<input type="button" value="Get Attribute Values"/>
newsgroups.KeywordsInfo	=	<input type="button" value="Get Attribute Values"/>
newsgroups.LinesOfEmail	=	<input type="button" value="Get Attribute Values"/>

Output Format: Tabular Linear Tiled Form1 Form2

Number of Items to Display: OuterJoin: Yes No

Field Demos

Field Demonstrations for News Groups

Demo #1: [Postings of Eric Lancaster](#)

Demo #2: [Postings on 7th January 1999](#)

Demo #3: [Postings on the Classical Studies Subject with line count above 1000 but below 5000](#)

Demo #4: [Postings with Content-Type header](#)

Demo #5: [Non-required and non-optional headers](#)

[Collection-level Metadata](#)

[Object-level Metadata](#)

[Collection Life-Cycle and Statistics](#)

FIGURE 12

RESULTS OF E-MAIL COLLECTION QUERY

PERSISTENT ARCHIVES
 Inventors: Reagan W. Moore, et
 al.
 Howrey Docket No. 02737.0004.NP

13/118

IMCAI SRB A Data Integration System - Microsoft Internet Explorer

File Edit View Favorites Tools Help

Back Forward Stop Refresh Home

Address: http://sib.npac.ac.edu/

Here are matches 1 through 10

From:lml@bitmover.com (Larry McVoy)
 Date:7 Jan 1999 00:00:03 GMT
 News Groups:comp.lang.tcl
 Subject:resizing paned window slaves?
 Sender:
 Key Words:
 Lines:14
 (metadata in xml)

Field Demonstrations for News

Groups

Demo #1: Postings of Eric
 Lancaster

Demo #2: Postings on 7th January
 1999

Demo #3: Postings on the Classical
Studies Subject with line
 count above 1000 but
 below 5000

Demo #4: Postings with Content-
 Type header

Demo #5: Non-required and non-
 optional headers

Collection-level Metadata

Object-level Metadata

Collection Life-Cycle and Statistics

http://www.bitmover.com/1m

Larry McVoy

FIGURE 13

```
<!ELEMENT caccf_collection (caccf_database)*>           list of CACCF databases

<!ELEMENT caccf_database (                           a single database
    date_id,                                         creation date, identifies the database
    record_size,                                     size of each record (bytes)
    caccf_records                                    the actual data records
)>

<!ELEMENT caccf_records (                           list of caccf records
    caccf_record*
)>
```

FIGURE 14

<!ELEMENT caccf_record EMPTY		all info is in the attributes	
>			
<!ATTLIST caccf_record			
ms	CDATA #REQUIRED	1	Military Service (DoD Component)
cc	CDATA #REQUIRED	2	Country of Casualty
tc	CDATA #REQUIRED	2	Type of Casualty
rn	CDATA #REQUIRED	5	Reference Number (File Ref. No)
na	CDATA #REQUIRED	28	Name (of Casualty)
dp	CDATA #REQUIRED	4	Date Record Processed (YYMM)
sn	CDATA #REQUIRED	9	Social Security OR Service Num.
mg	CDATA #REQUIRED	4	Military Grade (Grade or Rate)
pg	CDATA #REQUIRED	2	Pay Grade (Grade or Rate)
dd	CDATA #REQUIRED	8	Date of Death (MM/DD/YY) (Casualty)
hc	CDATA #REQUIRED	20	"Home of Record" City (Place)
hs	CDATA #REQUIRED	2	"Home of Record" State Code
oc	CDATA #REQUIRED	5	Service Occupation Code
db	CDATA #REQUIRED	8	Date of Birth (MM/DD/YY)
rc	CDATA #REQUIRED	1	Reason (Cause of Casualty)
ai	CDATA #REQUIRED	1	Aircraft or Not Aircraft
ra	CDATA #REQUIRED	1	Race
re	CDATA #REQUIRED	2	Religion Code (Religious Denom.)
le	CDATA #REQUIRED	2	Length of Service in Years
ma	CDATA #REQUIRED	1	Marital Status
se	CDATA #REQUIRED	1	Sex
ci	CDATA #REQUIRED	1	Citizen Code
pp	CDATA #REQUIRED	1	Posthumous Promotion
dt	CDATA #REQUIRED	6	Date Tour in Southeast Asia
lr	CDATA #REQUIRED	1	Last Record Code
br	CDATA #REQUIRED	3	Body Recovered or Not
ag	CDATA #REQUIRED	2	Age at Time of Casualty
sc	CDATA #REQUIRED	1	Component (Service Component)
co	CDATA #REQUIRED	29	Comments
ty	CDATA #REQUIRED	2	Type
pc	CDATA #REQUIRED	2	Province Code (South Vietnam)
Provinces &			
mc	CDATA #REQUIRED	2	Military Regions
pr	CDATA #REQUIRED	2	CORPCD
fl	CDATA #REQUIRED	2	PROCD
>			

FIGURE 15

```

create table CACCF (
    REC_NO          int not null,          -- DICE: no. as found in the source
    MIL_SERVICE     char (1),            -- Military Service (DoD Component)
    CASUALTY_COUNTRY char (2),          -- Country of Casualty
    CASUALTY_TYPE   char (2),            -- Type of Casualty
    REF_NO          char (5),            -- Reference Number (File Ref. No)
    NAME            char (28),           -- Name (of Casualty)
    PROCESSED       char (4),            -- Date Record Processed (YYMM)
    SSN_SERVICE_NO char (9),            -- Social Security OR Service Num.
    GRADE           char (4),            -- Military Grade (Grade or Rate)
    PAY_GRADE       char (2),            -- Pay Grade (Grade or Rate)
    DIED             date,              -- Date of Death (MM/DD/YY)(Casualty)
    HOR_CITY         char (20),           -- "Home of Record" City (Place)
    HOR_STATE        char (2),            -- "Home of Record" State Code
    OCCUPATION      char (5),            -- Service Occupation Code
    BORN             date,              -- Date of Birth (MM/DD/YY)
    CASUALTY_REASON char (1),           -- Reason (Cause of Casualty)
    AIR              char (1),            -- Aircraft or Not Aircraft
    RACE             char (1),            -- Race
    RELIGION         char (2),            -- Religion Code (Religious Denom.)
    SERVICE_LENGTH   char (2),            -- Length of Service in Years
    MARITAL_STATUS   char (1),            -- Marital Status
    SEX              char (1),            -- Sex
    CITIZEN          char (1),            -- Citizen Code
    PH_PROMOTION     char (1),            -- Posthumous Promotion
    SEA TOUR        date,              -- Date Tour in Southeast Asia
    LAST_RECORD      char (1),            -- Last Record Code
    BODY_RECOVERED   char (3),           -- Body Recovered or Not
    AGE              char (2),            -- Age at Time of Casualty
    COMPONENT        char (1),            -- Component (Service Component)
    COMMENTS         char (29),           -- Comments
    TYPE             char (2),            -- Type
    PROVINCE         char (2),            -- Province Code (South Vietnam Provinces and
    Military Regions)          -- (South Vietnam Provinces and
    CORPCD           char (2),            -- CORPCD
    PROCD            char (2),            -- PROCD
    FLAG             char (2),            -- Flag
    NOTES            varchar (1000) -- DICE: notes/corrections made
    PRIMARY KEY      (SSN_SERVICE_NO),  -- Primary Key
    UNIQUE           (REC_NO)           -- Unique
)
    
```

FIGURE 16

```
/* Find records with incomplete BORN or DIED date: */  
SQL> select REC_NO, NAME, BORN, DIED, AGE from CACCF  
where BORN is null or DIED is null;  
REC_NO NAME          BORN      DIED      AG  
-----  
2114 SEVENBERGEN JERRY L          16-MAR-66 0  
3882 DOMINGUEZ MICHAEL J        10-SEP-66 0  
3883 JORDAN ALLAN H          10-SEP-66 0  
...  
33997 HALIBURTON MICHAEL R          08-AUG-70 0  
17 rows selected.  
/* How many entries do NOT have a value for 'Date Tour in Southeast Asia'? */  
SQL> select count (*) from CACCF where SEA_TOUR is null;  
COUNT(*)
```

FIGURE 17

/* What is the number and min/max/average age of the casualties over entries where AGE is available? */

SQL> select count(*), min(AGE), max(AGE), avg(AGE)

- from CACCF
- where not AGE = '0';

COUNT(*)	MI	MA	AVG(AGE)
58164	16	62	22.7932742

FIGURE 18

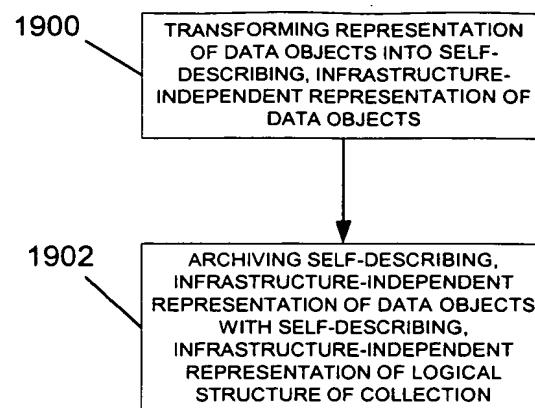


FIGURE 19

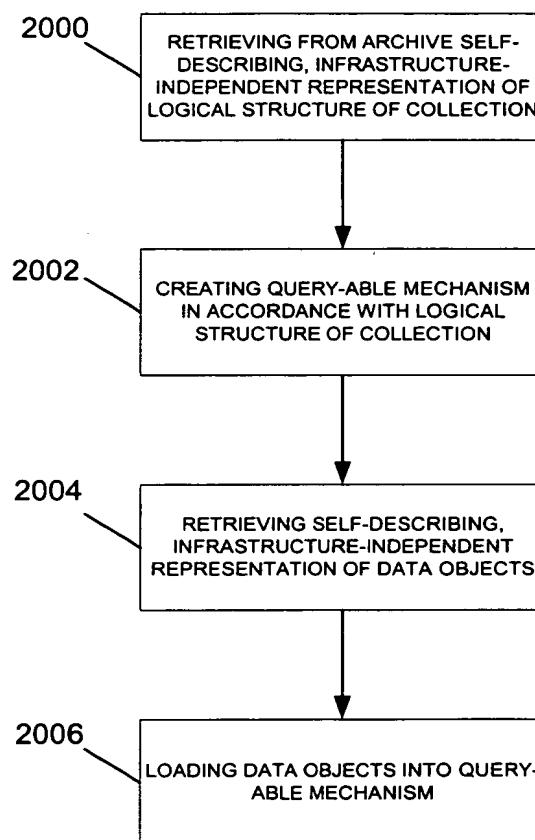


FIGURE 20

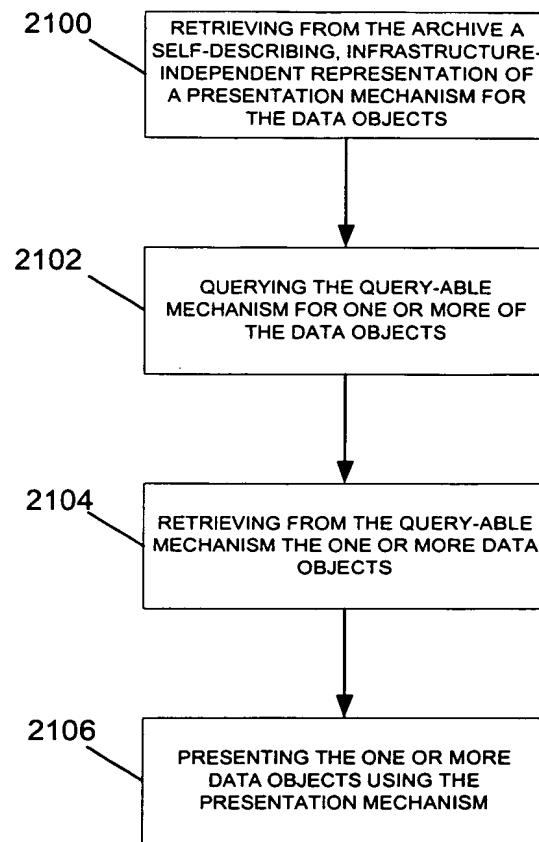


FIGURE 21A

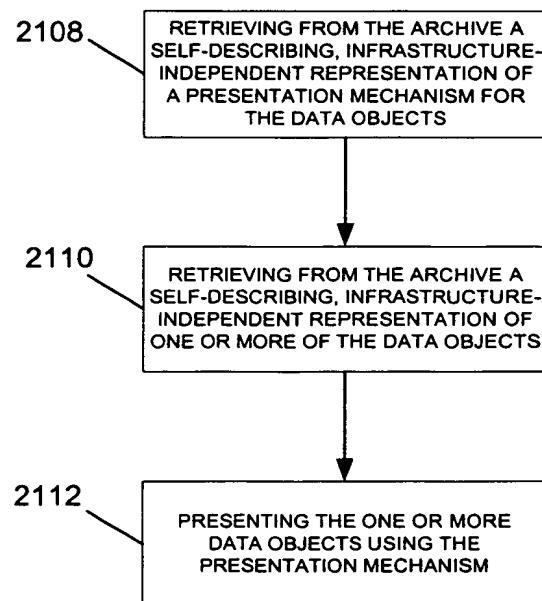


FIGURE 21B

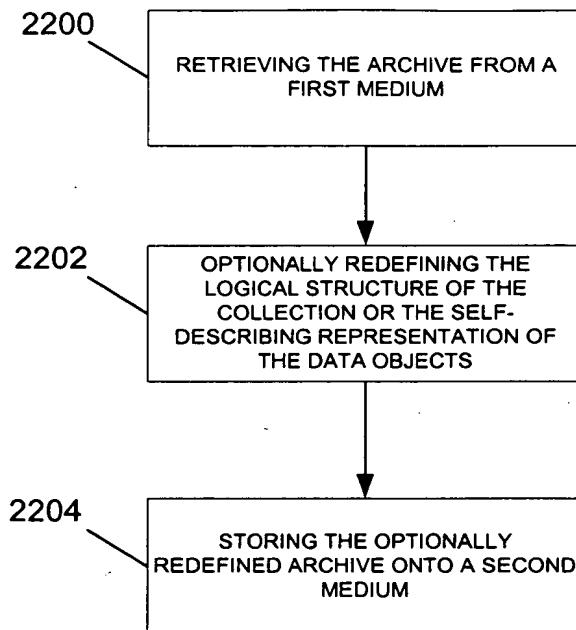


FIGURE 22

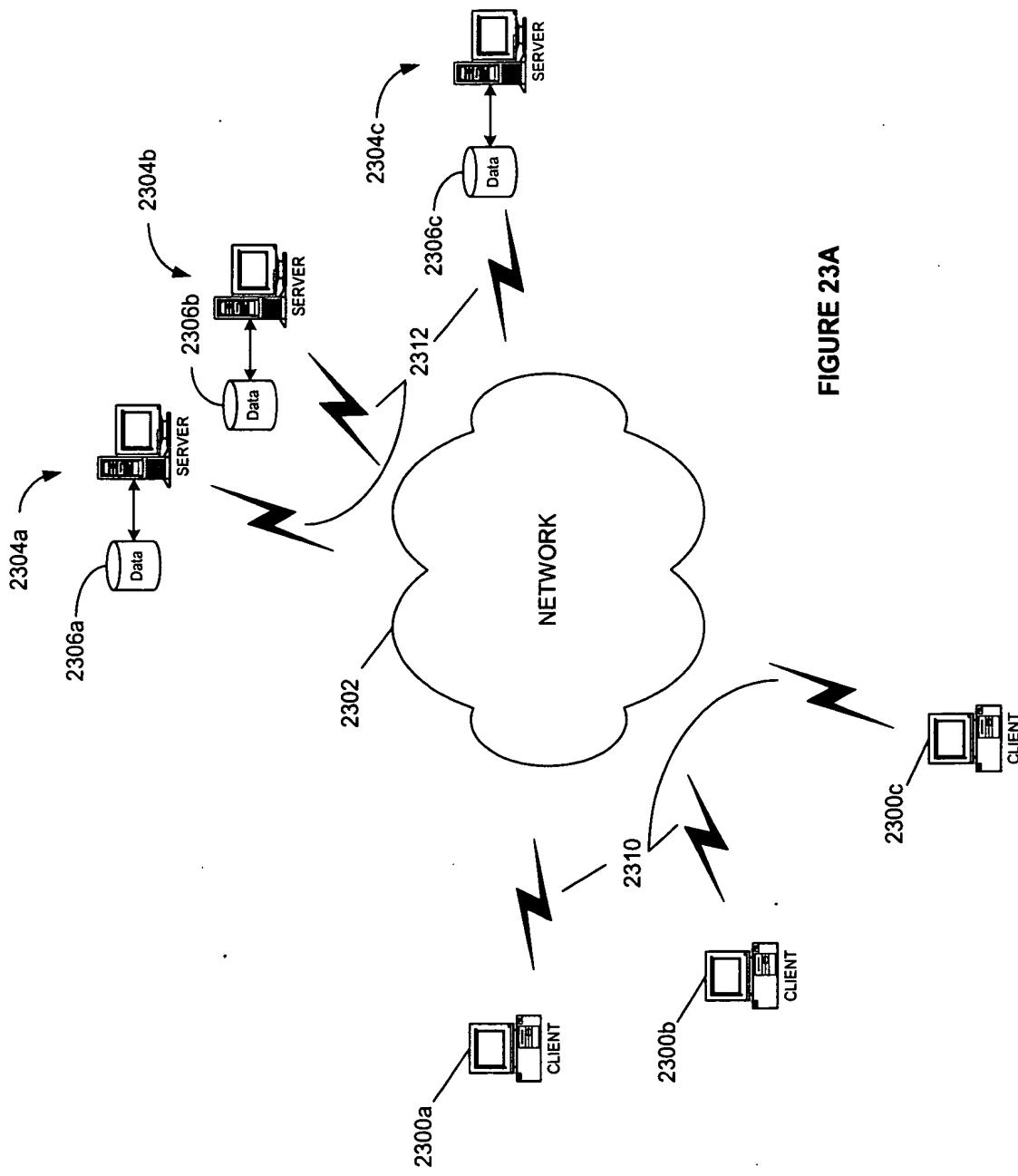


FIGURE 23A

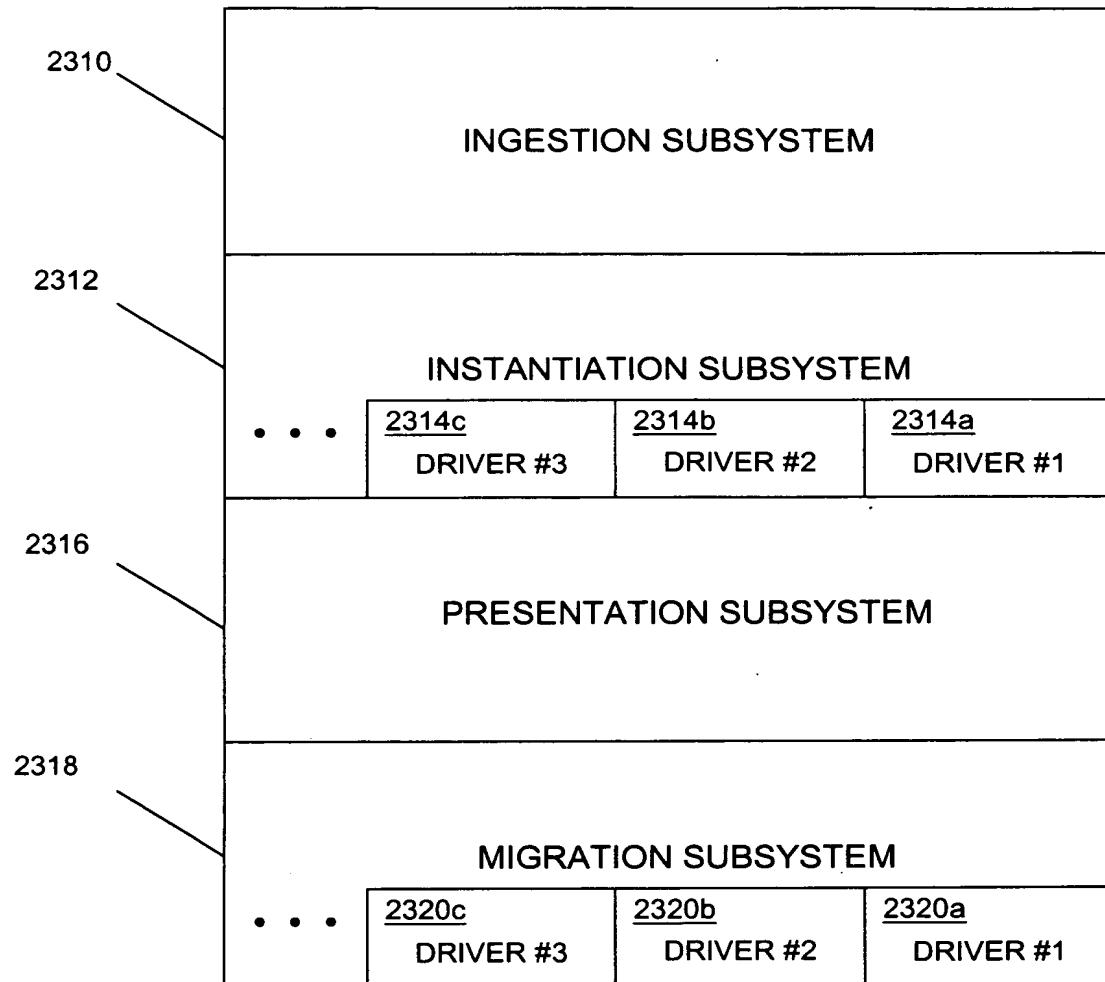


FIGURE 23B

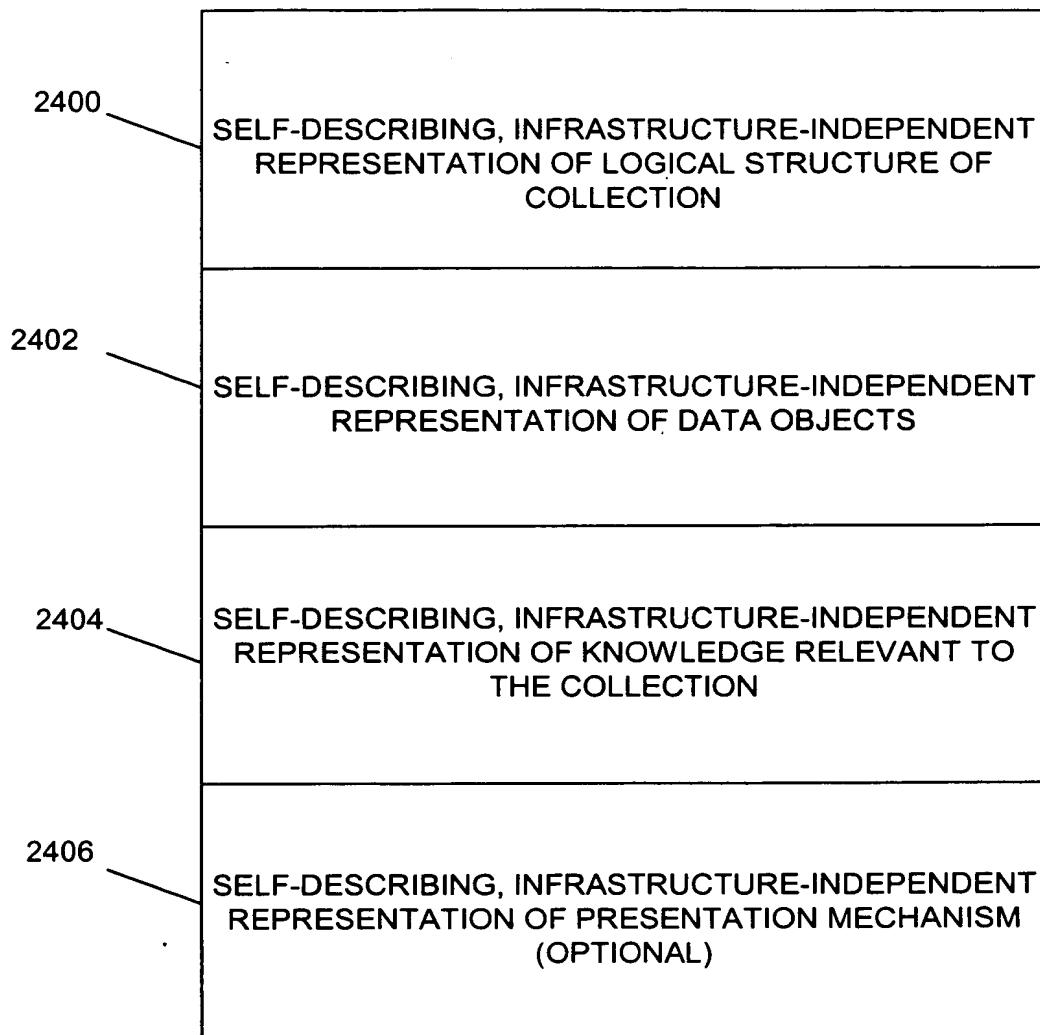


FIGURE 24

```
<!ELEMENT DOCUMENT (CONGRESS|RESOLUTION|ATTESTATION)* >
<!ATTLIST DOCUMENT DOCID CDATA #IMPLIED>
<!ATTLIST DOCUMENT REFERENCENUMBER CDATA #IMPLIED>
<!ATTLIST DOCUMENT CLASS CDATA #IMPLIED>

<!ELEMENT CONGRESS (NUMBER|SESSIONNUMBER|(BODYOFCONGRESS)*|DATE) >
<!ELEMENT NUMBER (#PCDATA)* >
<!ELEMENT SESSIONNUMBER (#PCDATA)* >
<!ELEMENT BODYOFCONGRESS (#PCDATA)* >
<!ELEMENT DATE (#PCDATA)* >
<!ELEMENT RESOLUTION (TYPE|STATEMENT)* >
<!ELEMENT TYPE (#PCDATA)* >
<!ELEMENT STATEMENT (OPENING|(STRIKEOUT|INSERT)*|CLOSING) >
<!ELEMENT OPENING (#PCDATA)* >
<!ELEMENT STRIKEOUT (#PCDATA)* >
<!ELEMENT INSERT (#PCDATA)* >
<!ELEMENT CLOSING (#PCDATA)* >
<!ELEMENT ATTESTATION (#PCDATA)* >
```

FIGURE 25

```
<!ELEMENT DOCUMENT (CONGRESS|ACT)* >

<!ATTLIST DOCUMENT DOCID CDATA #IMPLIED>
<!ATTLIST DOCUMENT REFERENCENUMBER CDATA #IMPLIED>
<!ATTLIST DOCUMENT CLASS CDATA #IMPLIED>

<!ELEMENT CONGRESS (NUMBER|SESSIONNUMBER|BODYOFCONGRESS|DATE) >
<!ELEMENT NUMBER (#PCDATA)* >
<!ELEMENT SESSIONNUMBER (#PCDATA)* >
<!ELEMENT BODYOFCONGRESS (#PCDATA)* >
<!ELEMENT DATE (#PCDATA)* >

<!ELEMENT ACT (PURPOSE|SECTION)* >

<!ELEMENT PURPOSE (#PCDATA)* >
<!ELEMENT SECTION (HEADING|STATEMENT|SUBSECTION)* >
<!ATTLIST SECTION NUMBER CDATA #IMPLIED>

<!ELEMENT HEADING (#PCDATA|SHORTTITLE)* >
<!ELEMENT SHORTTITLE (#PCDATA)* >

<!ELEMENT STATEMENT (#PCDATA | AMENDMENT | SECTION | ATTESTATION | TEXT)* >
<!ELEMENT AMENDMENT (CODE|STRIKEOUT|INSERT|REDESIGNATE)* >
<!ELEMENT CODE (#PCDATA)* >
<!ELEMENT STRIKEOUT (#PCDATA)* >
<!ELEMENT INSERT (#PCDATA|PARAGRAPH|SUBSECTION|INSERT)* >
<!ELEMENT PARAGRAPH (TOPIC|TEXT|PARAGRAPH)* >
<!ATTLIST PARAGRAPH NUMBER CDATA #IMPLIED>

<!ELEMENT SUBSECTION (TOPIC|PARAGRAPH)* >
<!ATTLIST SUBSECTION NUMBER CDATA #IMPLIED>

<!ELEMENT TOPIC (#PCDATA)* >
<!ELEMENT TEXT (#PCDATA)* >
<!ELEMENT REDESIGNATE (#PCDATA)* >
<!ELEMENT ATTESTATION (#PCDATA)* >
```

FIGURE 26

<!ELEMENT STATEMENT (#PCDATA | AMENDMENT | SECTION | ATTESTATION | TEXT)* >

FIGURE 27

<DOCUMENT DOCID="f:hc148eas.txt" REFERENCENUMBER = "H. CON. RES. 148"
CLASS="Concurrent Resolution">

<CONGRESS>
<NUMBER>104th CONGRESS</NUMBER>
<SESSIONNUMBER>2d Session</SESSIONNUMBER>
<BODYOFCONGRESS>Senate of the United States</BODYOFCONGRESS>
<DATE>March 21, 1996</DATE>
</CONGRESS>

<RESOLUTION>
<TYPE>AMENDMENTS</TYPE>
<STATEMENT>
<OPENING>
Resolved, That the resolution from the House of Representatives (H. Con. Res. 148) entitled "Concurrent resolution expressing the sense of the Congress that the United States is committed to military stability in the Taiwan Strait and the United States should assist in defending the Republic of China (also known as Taiwan) in the event of invasion, missile attack, or blockade by the People's Republic of China.", do pass with the following

</OPENING>
<STRIKEOUT>Strike out all after the resolving clause
</STRIKEOUT>
<INSERT>
That it is the sense of the Congress-
(1) to deplore the missile tests and military exercises that the People's Republic of China is conducting from March 8 through March 25, 1996, and view such tests and exercises as potentially serious threats to the peace, security, and stability of Taiwan and not in the spirit of the three United States-China Joint Communiques;
(2) to urge the Government of the People's Republic of China to cease its bellicose actions directed at Taiwan and enter instead into meaningful dialogue with the Government of Taiwan at the highest levels, such as through the Straits Exchange Foundation in Taiwan and the Association for Relations Across the Taiwan Strait in Beijing, with an eye towards decreasing tensions and resolving the issue of the future of Taiwan;
(3) that the President should, consistent with section 3rd of the Taiwan Relations Act of 1979 (22 U.S.C. 3302rd), immediately consult with Congress on an appropriate United States response to the tests and exercises should the tests or exercises pose an actual threat to the peace, security, and stability of Taiwan; (4) that the President should, consistent with the Taiwan Relations Act of 1979 (22 U.S.C. 3301 et seq.), reexamine the nature and quantity of defense articles and services that may be necessary to enable Taiwan to maintain a sufficient self-defense capability in light of the heightened military threat; and
(5) that the Government of Taiwan should remain committed to the peaceful resolution of its future relations with the People's Republic of China by mutual decision.

</INSERT>
<STRIKEOUT>Strike out the preamble</STRIKEOUT>
<INSERT>
Whereas the People's Republic of China, in a clear attempt to intimidate the people and Government of Taiwan, has over the past 9 months conducted a series of military exercises, including missile tests, within alarmingly close proximity to Taiwan;
Whereas from March 8 through March 15, 1996, the People's Republic of China conducted a series of missile tests within 25 to 35 miles of the 2 principal northern and southern ports of Taiwan, Kaohsiung and Keelung;
Whereas on March 12, 1996, the People's Republic of China began an 8-day,

28A

28B

28C

FIGURE 28A

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live-ammunition, joint sea-and-air military exercise in a 2,390 square mile area in the southern Taiwan Strait;

Whereas on March 18, 1996, the People's Republic of China began a 7-day, live-ammunition, joint sea-and-air military exercise between Taiwan's islands of Matsu and Wuchu;

Whereas these tests and exercises are a clear escalation of the attempts by the People's Republic of China to intimidate Taiwan and influence the outcome of the upcoming democratic presidential election in Taiwan; Whereas through the administrations of Presidents Nixon, Ford, Carter, Reagan, and Bush, the United States has adhered to a "One China" policy and, during the administration of President Clinton, the United States continues to adhere to the "One China" policy based on the Shanghai Communique of February 27, 1972, the Joint Communique on the Establishment of Diplomatic Relations Between the United States of America and the People's Republic of China of January 1, 1979, and the United States-China Joint Communique of August 17, 1982;

Whereas through the administrations of Presidents Carter, Reagan, and Bush, the United States has adhered to the provisions of the Taiwan Relations Act of 1979 (22 U.S.C. 3301 et seq.) as the basis for continuing commercial, cultural, and other relations between the people of the United States and the people of Taiwan and, during the administration of President Clinton, the United States continues to adhere to the provisions of the Taiwan Relations Act of 1979;

Whereas relations between the United States and the Peoples' Republic of China rest upon the expectation that the future of Taiwan will be settled solely by peaceful means; Whereas the strong interest of the United States in the peaceful settlement of the Taiwan question is one of the central premises of the three United States-China Joint Communiqus and was codified in the Taiwan Relations Act of 1979; Whereas the Taiwan Relations Act of 1979 states that peace and stability in the western Pacific "are in the political, security, and economic interests of the United States, and are matters of international concern";

Whereas the Taiwan Relations Act of 1979 states that the United States considers "any effort to determine the future of Taiwan by other than peaceful means, including by boycotts, or embargoes, a threat to the peace and security of the western Pacific area and of grave concern to the United States"; W

Whereas the Taiwan Relations Act of 1979 directs the President to "inform Congress promptly of any threat to the security or the social or economic system of the people on Taiwan and any danger to the interests of the United States arising therefrom";

Whereas the Taiwan Relations Act of 1979 further directs that "the President and the Congress shall determine, in accordance with constitutional process, appropriate action by the United States in response to any such danger";

Whereas the United States, the People's Republic of China, and the Government of Taiwan have each previously expressed their commitment to the resolution of the Taiwan question through peaceful means; and

Whereas these missile tests and military exercises, and the accompanying statements made by the Government of the People's Republic of China, call into serious question the commitment of China to the peaceful resolution of the Taiwan question: Now, therefore, be it.

</INSERT>
<CLOSING>

Amend the title so as to read: "Expressing the sense of Congress regarding missile tests and military exercises by the People's Republic of China.".

FIGURE 28B

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```
</CLOSING>
</STATEMENT>
</RESOLUTION>
<ATTESTATION>Secretary</ATTESTATION>
</DOCUMENT>
```

FIGURE 28C

PERSISTENT ARCHIVES
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Prefix	Meaning
h	House of Representatives
hc	House of Representatives concurrent resolution
hj	House of Representatives joint resolution
hr	House of Representatives resolution
s	Senate
sc	Senate concurrent resolution
sj	Senate joint resolution
sr	Senate resolution

FIGURE 29

PERSISTENT ARCHIVES

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Suffix	Count	Meaning
as	3	amendment in the Senate
ath	97	considered and agreed to in the House
ats	251	considered and agreed to in the Senate
cdh	6	considered in the House (and committed to a committee)
cds	1	considered in the Senate (and committed to a committee)
cph	19	considered and passed in the House
cps	20	considered and passed in the Senate
eah	36	resolved with amendments in the House
eas	115	resolved with amendments in the Senate
eh	887	enactment resolved in the House
es	270	enactment resolved in the Senate
enr	413	
hds	3	held at the desk in the Senate
ih	4947	introduced in the House
is	2271	introduced in the Senate
ips	4	indefinitely postponed in the Senate
lth	8	laid on the table in the House
pch	1	placed on calendar in the House
pcs	184	placed on calendar in the Senate
pp	31	ordered to be printed as passed
rch	8	re-referred to the same or a different committee in the House
rcs	6	re-referred to the same or a different committee in the Senate
rds	187	received in the Senate
rfh	103	referred to a committee in the House
rih	1	referred to a committee for a limited time in the House
ris	44	referred to a committee for a limited time to report, or be discharged and placed on the calendar in the Senate
rh	742	report in the House
rs	471	report in the Senate
rh2	1	2-part report in the House
rs2	3	2-part report in the Senate
rth	1	referred to committee in the House
rts	5	referred to committee in the Senate
sc	1	

FIGURE 30

C.2.10 Record Fields: One Record of One Object (A.3)									
Field		AMICO Field		Object Type		C.2.10 Record Fields		C.2.10 Record Fields	
C.2.10 Record Fields		C.2.10 Record Fields		C.2.10 Record Fields		C.2.10 Record Fields		C.2.10 Record Fields	
Unique Identification									
Catalog	AID	AMICO Identifier	*	*	N	A unique identifier, assigned to a work in the AMICO Library. Comprised of a 4 letter institutional abbreviation, followed by a dot, and then a unique number such as an accession number [DOIs will be investigated in the future]		Validate. First 4 characters from Member Code Value Table followed by period	NMWA.87-32547/a[g]~ AIC_456502)~ GEH_3457-86)~
What is it?									
Catalog	OTY	Object-Type	*	*	Y	The kind of work of art described; chosen from a short list of terms	AAT- Objects	Validate. Object installation)~ sculpture)~ watercolor)~	
Catalog	OPP	Object-Parts/Pieces			Y	The number and a description of any parts/pieces of the work of art.	AAT	no conditions	chair, shelf, painting on canvas, robe, and bridle)~ 3 panels)~ 2)~
Catalog	QG	Classification			Y	Group Does not contain data; used to group fields describing work.		Validate. Null value)~	
Catalog	QT	Classification-Term			N	QG Terms used to associate this work with other like works	AAT	no conditions	sculptural multimedia installation)~ works of art on paper
Catalog	CLS	Classification-Scheme			N	QG The classification scheme from which a term was chosen			no repeat within group #####
What is it called?							AAT)~		
Catalog	OTG	Object-Title/Name	*	*	Y	Group		Validate. Null value)~	

31A	31B	31C	31D	31E	31F	31G	31H	31I	31J
31L									
31K									
31J									
31M									

FIGURE 31A

Catalog	OTN	Object-Title-Name	*	N	OTG	The title or name of the work	no conditions	In the Afternoon}~untitled}~Blue #6 preferred}~ popular}~ as first exhibited}~	no repeat within group	#####
Catalog	OTT	Title-Type		Y	OTG	The kind of Title or Name assigned to the work: Can include terms/phrases such as 'preferred', as given by artist', etc.	no conditions			
Catalog	OST	State		Y		For works produced in multiples, the state of this particular impression	no conditions	1 of 5}~ only known}~ artists proof		
Catalog	OEN	Edition		Y		For works produced in multiples, the edition of this particular example.	no conditions	1st}~ Second American}~		
What does it look like?										
Catalog	OPD	Physical Description		N		A narrative description of the physical appearance of the work including any parts or components.	no conditions	The objects are off center with a brick pathway leading towards them and the canvas in the background}~ Installation piece for the 2nd floor sculpture court comprised of several pine sticks. The ones in the center are burned}~		
Catalog	OPA	Physical Orientation/Arrangement		N		A narrative description of the orientation of the work, or its physical arrangement or set-up. For example, used to describe how to assemble an installation, or hang an oddly shaped or abstract work.	no conditions	horizontal}~ designed for 14x28 room}~ on pedestal		
Catalog	MET	Measurements-Text	*	Y		A free text display form of the works measurements.	no conditions	14x28}~ 17.6" x 38" unframed}~ 160 kg}~ 13.2 cu. m.		

FIGURE 31B

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Catalog	MEG	Measurements		Y	Group	Does not contain data, used to group fields recording measurements.		Validate. Null value]~ only.	
Catalog	MCM	Measurement-Component-Measured		N	MEG	A term indicating what was measured (sheet, frame, lid, pedestal etc.)	AAT	no conditions	sheet]~ frame]~ lid]~ pedestal]~
Catalog	NED	Measurement-Dimension		N	MEG	A term indicating the measurement taken, drawn from the following list: height, width, depth, weight, circumference, duration, volume (other terms may be added)	Validate. Dimensions Value Table.		height]~ width]~ length]~ circumference]~ diameter]~ volume]~ weight]~ duration]~
Catalog	MDV	Measurement-Dimension-Value		N	MEG	The number of units of the measurement (numeric only)	Validate. Numeric	37.6]~ 14]~ 182.25	
Catalog	MDU	Measurement-Dimension-Units		N	MEG	The unit in which the measurement was taken: inches, feet, mm, cm, lbs., oz., kg, gr., minutes, sq. ft., cu. ft. etc.	Validate. Measurement Units Value Table	linear measurements: inches]~ ft]~ mm]~ cm]~ meters]~ planar measurements: sq.ft.]~ sq.m.]~ volumetric measurements: cu.ft. cu. meters]~ pounds, ounces]~ grams, kilograms]~ seconds, minutes]~ hours]~)	#####
Catalog	MEQ	Measurement-Qualifier		N	MEG	A qualification or indication of the accuracy of a measurement	no conditions	plus/minus 10]~ accurate to 98%]~ circa]~	no repeat within group
Catalog	OMG	Materials and Techniques		Y	Group	Does not contain data, used to group fields documenting materials and techniques used to create the work.	Validate. Null value]~ only.		
Catalog	OMD	Materials and Techniques-Description	*	N	OMG	A free text description of the materials and techniques used to create the work of art.	AAT		
Catalog	OMT	Materials and Techniques-Process/Technique-Term		Y	OMG	Single terms that index the processes and techniques used to create the work.	AAT	no conditions. look up in AAT Processes/Techniques Hierarchy	

FIGURE 31C

Catalog	OMM	Materials and Techniques- Materials-Term	Y	OMG	Single terms that index the materials used to create the work.	AAT	no conditions. look up in AAT Materials Hierarchy	brick}~ oak}~ watercolor}~ vanish}~
Catalog	OMS	Materials and Techniques- Support	Y	OMG	Single terms that index the support on which the work was created.	AAT	no conditions. look up in AAT Materials Hierarchy	rice paper}~ canvas
Catalog	OIN	Inscriptions and/or Marks	Y		A free text description or transcription of any inscriptions or marks on the work, including their location, medium, hand, and other details.		no conditions	signed}~ [G, lower front}~ silver mark on handle}~ inscribed "to my friend John" on rear, with date July 14, 1973}~
Catalog	OCH	Condition/Eamination History	Y		A narrative description of the Condition or Examination History of the work of art. Cite documentation associated with Condition or Examination History in the Related Documents Group.		no conditions	Excellent Condition according to Condition Report, 14/7/82, H.M. Black, Conservator}~ not inspected when first accessioned, found to have scratch in upper left, 3 inches long, during 1965 inventory}~
Catalog	OTH	Treatment/Conservation History	Y		A narrative description of the Treatment or Conservation of the Work of art. Cite Documentation associated with Treatment or Conservation in the Related Documents Group.		no conditions	Restored, summer 1987. Detailed treatment report available}~ Base reaffixed July 1987}~
Who made it?	ORG	Creator						Validate. Null value only.
Catalog								

FIGURE 31D

	Catalog	CRQ	Creator- Qualifier		N	CRG	A qualification of the attribution of the work to a particular creator.			no conditions	School of{~ Follower of{~ Attributed to}{~ Copy after}{~	
	Catalog	CRT	Creator-Name- Text	*	*	N	CRG	Display form (direct order) of Creator Name (and qualifier). If Creator Name isn't present, display form of Creator Culture/Nationality	ULAN	no conditions	Vito Aconci}{~ W. Eugene Smith}{~ Rembrandt van Rijn	no repeat within group #####
	Catalog	CRN	Creator-Name		*or ORG	N	CRG	Sort Form (inverted, last name first) of Creator name, used in indexing.	ULAN	Validate presence/ or presence of CRN	Aconci, Vito}{~ Smith, W. Eugene}{~ Rembrandt van Rijn	#####
	Catalog	CRG	Creator- Culture/National- ity		N	CRG	The culture or nationality of the creator who made the work, or to which the creation of the work is attributed.	AAT	Validate presence/ or presence of CRN	Benin Culture}{~ Egyptian 1085-710 B.C.}{~ Native American		
	Catalog	CDT	Creator- Dates/Locations- Text		N	CRG	A free text description of dates and places associated with the creator or culture that created the work.	TGN	no conditions. Parse Numeric years to identify begin and end dates, BC, and qualifiers	born 1876 in Staffordshire, England}{~ after 800 B.C.}{~ not before 1766}{~ c.1450}{~ 3rd century B.C.}{~ Died 1990		
	Catalog	CDB	Creator-Birth- Date		N	CRG	The date of birth of the creator.	numeric	Validate. Numeric, Parse to Validate. YYYYMMDD	1957}{~ 19780914}{~ 190206}{~ renamed from CDB (typo originally)	#####	
	Catalog	CPB	Creator-Birth- Place		N	CRG	The place the creator was born.	TGN	no conditions.	Lille, France}{~ The Netherlands}{~ London, Ontario, Canada		
	Catalog	CBQ	Creator-Birth- Qualifier		N	CRG	A free text qualifier of the date of birth of the creator.		Validate. Date Qualifier Value Table	C}{~ circa}{~ before}{~ not after}{~ no later than}{~		
	Catalog	CDD	Creator-Death- Date		N	CRG	The date the creator of the work died.	numeric	Validate. Numeric, Parse to Validate. YYYYMMDD	1320}{~ 19380914}{~ 710 B.C.}{~		

FIGURE 31E

Catalog	CDP	Creator-Death-Place		N	CRG	The place of death of the creator.	TGN	no conditions.		
Catalog	CDQ	Creator-Death-Qualifier		N	CRG	A free text qualifier of the date of death of the creator.	Validate Date Qualifier Value Table	C}~circa}~before}~not after}~no later than}~		
Catalog	CAD	Creator-Active-Date		N	CRG	The creator's dates of activity, may be known when birth and death are not.	numeric	no conditions	1342-1386}~1960s}~early 7th century BC}~	
Catalog	CAP	Creator-Active-Place		Y	CRG	The place where the creator was active. May repeat with multiple places.	TGN	no conditions	France}~Middle Kingdom, Egypt}~North America}~	
Catalog	CGN	Creator-Gender		N	CRG	the gender of the creator.	Male/Female Validate 'Male' or 'Female'	Male}~Female}~	Male}~Female}~	corrected M and F in validation to match examples. #####
Catalog	CRB	Creator-Biography		N	CRG	A free text biography of the creator of the work.	no conditions	Active in Canada 1844-71; Came to Canada in 1842}~Winner of the Prix du Rome in 1903.		
Catalog	CRR	Creator-Role		Y	CRG	A term or terms describing the role played by the creator in the making of the work of art.	AAT no conditions. Construct Role Values list	sculptor}~designer}~print maker}~castings manager}~		
Catalog	CNO	Creator-Notes		N	CRG	A free text note about the creator, and the relationship between the creator or culture and the work of art.	no conditions	Not known to have ever signed works.		
When was it made?										
Catalog	OCG	Creation-Dates		Y	Group	Does not contain data; used to group fields dating work's creation.	Validate Null value only.			
Catalog	OCT	Creation-Date-Text	*	*	N	OCG	The date on which a work was created, or a range of dates during which it could have been created	Parse to Numeric equivalent s	C. 1645}~1957}~dated by the artist as September 13, 1975}~	

FIGURE 31F

Catalog	OCS	Creation-Date-Start		N	OOG	A number, indicating the earliest possible date a work could have been created; BC dates are recorded as negative integers	numeric	Validate: Numeric Parse to Validate: YYYYMMDD	1300)~198209)~1946103)~
Catalog	OCE	Creation-Date-End		N	OOG	A number, indicating the latest possible date a work could have been created; BC dates are recorded as negative integers	numeric	Validate: Numeric Parse to Validate: YYYYMMDD	1350)~198301)~1946103)~
Catalog	OQ	Creation-Date-Qualifier		N	OOG	A qualifier, that indicates approximation in the earliest or latest date.		Validate: Date Qualifier Value Table	C)~ circa)~ before)~ not after)~ no later than)~
Where was it made?									
Catalog	OCP	Creation-Place	Y			A place or places where the work was created.	TGN	no conditions. Lookup in TGN	Paris, France)~Loire River Valley)~ Los Angeles, California, USA)~
What is it about?									
Catalog	STG	Style/Period	Y	Group		Does not contain data; used to group fields describing work's style or period.		Validate: Null value only.	
Catalog	STD	Style/Period-Description		N	STG	A narrative description of the style or period of the work of art.	AAT	no conditions. Parse terms from AAT Style and Periods to with 13th century decorative glazes)~ Style & Period Terms	Early Christian with Byzantine influence)~ Eastern Han ceramic were with 13th century decorative glazes)~ Baroque)~ Baroque influence)~
Catalog	STT	Style/Period-Terms		Y	STG	Index terms that characterize the style and/or period of the work of art.	AAT	no conditions. Look up in AAT Style & Periods	Art Nouveau)~ Minoan ware)~ French Colonial)~
Catalog	SUG	Subject Matter	Y	Group		Does not contain data; used to group fields documenting work's subject matter.		Validate: Null value only.	

FIGURE 31G

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Catalog	SUP	Subject Matter- Prelongraphic Description	N	SUG	A free text description of the generic subject of the work of art.	AAT	no conditions	
Catalog	SUJ	Subject Matter- Iconography	Y	SUG	A free text description of the specific, named subject of the work of art.		no conditions	
Catalog	SUJ	Subject Matter- Index Terms	Y	SUG	Index terms that characterize the subject of the work of art.	AAT	no conditions	
Catalog	OG	Context	Y	Group	Does not contain data; used to group fields documenting work's context.		Validate. NUL value only.	
Catalog	OD	Context- Description	N	OG	A narrative description of the historical context of the work of art, including its creation, display, excavation, or other history.		no conditions	
Catalog	CP	Context- Related-Person	Y	OG	Index forms of the names of any people contextually related to the work of art.	ULAN	no conditions.	
Catalog	OS	Context- Related Site/Place	Y	OG	The names of any places that are contextually related to the work of art.	TGN	no conditions.	
Catalog	OT	Context-Time Period/Dates	N	OG	The dates, times or periods of a particular context.		no conditions.	
					Pastoral landscape with cattle in fields in background)~ Full length portrait with ball gown and pearls)~ Group of men at table gambling and drinking)~	Diana and hounds)~ Christ in the temple)~ Herod and the daughter of the innocents)~		
						Mrs. John Patronius)~ Count of Louis XIV)~ Netherlands - 16th century, Recreation)~		
						Pershing, John)~ Emperor Hirohito)~ Wu Han Dih)~ Pope Julius II		
						Brussels, Belgium)~ Pompeii, Italy)~ Times Square, New York, New York, USA)~		
						1876)~ 1782)~ prior to acquisition by the museum in 1956)~		

FIGURE 31H

Catalog	OCR	Critical Responses		Y	Narrative discussions of the critical reception or analysis of the work of art. Link any critical texts in the Related Documents Group.		no conditions	"Delightful! - A triumph." Maravil, Hans, "In the Light of Day," The New City News, January 7, 1987}~
Who showed it?								
Catalog	OEH	Exhibition or Loan History		Y	A record of when and where the work has been exhibited.			Manchester Museum of Art, June 10 - September 18, 1976, "New Lines in Grand Masters"~
Who owned it?								
Catalog	OOG	Owner		Y	Group Does not contain data used to group fields documenting works ownership.		Validate. Null value only.	
Catalog	OON	Owner Name	*	*	N	OOG The name of the institution or individual who owns the work now [e.g. the AMICO member]. Can repeat if multiple/part owners.	no conditions	SF MONA}~ The Trustees of the Harold J. Jameson Memorial Museum of Crafts}~
Catalog	OOP	Owner-Place	*	Y	OOG The place where the work is owned.	TGN	no conditions	Buffalo, New York, USA}~ St. Petersburg, Russia}~ San Diego, Chile}~
Catalog	OOA	Owner-Accession-Number	*	Y	OOG The accession or inventory number assigned to the work by this owner.		no conditions	87-4532.a-c}~ 456565-0112}~
Catalog	OOC	Owner-Credit-Line	*	*	Y	OOG The Credit Line, or any required mention or acknowledgement of the ownership of the work of art.	no conditions.	Gift of Ms. John Francis Blej~ Purchased with funds from trustees and friends in memory of Hector Escobosa, Brayton Wilbur and J.D. Zellerbach}~

FIGURE 31

	Catalog	OPO	Provenance/Prior Owners-Text	Y	A record of the past owners of the work of art.	no conditions	Andrew Carnegie)~ ASEA International Ltd.)~ Mr. & Mrs. John A. T. Pastors)~
	Catalog	ORG	Rights/Copyright	Y	Group Does not contain data; used to group fields documenting work's copyright or restrictions.	Validate. Null value only.	
	Catalog	ORS	Copyright-Statement	*	N ORG The copyright of the work of art, including any known rights holders, encumbrances or restrictions.	no conditions	Permission for educational use only granted by the Trustees of the Picasso estate)~ No reproductions permitted under terms of the gift)~
	Catalog	ORL	Copyright-Link	*	N ORG A URL that links to the ARTICO member, indicating where and how a user can acquire further information or rights to use the work.	Validate. Must be a url	(http://www.artic.edu)~
What is it related to?							
	Catalog	RWG	Related Works of Art	Y	Group Does not contain data; groups fields documenting related works of art.	Validate. Null value only.	
	Catalog	RWD	Related-Works-Description	N	RWG A narrative description of the relationship between this work and any others.	no conditions	David Hockney, "Mulholland Drive: the Road to the Studio", 1980)~ Other statues from the same site accessioned by the British Museum in 1845)~
	Catalog	RWR	Related-Works-Relationship-Type	N	RWG The kind of relationship; drawn from the list of Dublin Core Relationship types.	DC. Relations	Validate. DC Relations Type Value Table

FIGURE 31J

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Catalog	RWL	Related-Works- Identifier/Link		N	RWG	An identifier for or link to the related work of art.		Validate. AMICO Inst. Code, period, alpha-numeric	LAMA.AC1954.856.32]~ AKAG.1863:1]~
Catalog	RIG	Related Images	*	Y	Group	Does not contain data, groups fields documenting related images. All AMICO works must have at least one related image.		Validate. Null value only.]~
Catalog	RIP	Related-Image- Preferred	*	N	RIG	Indicates [yes/no] whether this is the preferred image of the work of art. Each work must have one preferred image, that will be used in lists and brief displays.	Y or N	Validate.]~ N]~
Catalog	RID	Related-Image- Description	*	N	RIG	The view of the work shown in this image: full, detail, recto, verso, 360 degrees, etc. Note: Maps to XDE in Multimedia Metadata Record	Validate. Views Value Table	Detail]~ Full View]~ Aerial view]~ 360 degrees]~ recto]~	no repeat within group
Catalog	RIR	Related-Image- Relationship- Type	*	N	RIG	The relation between this work and the image, using values from the Dublin Core Relationship Types. If original work is analog, and the image is digital, this value will be "HasFormat". If the original work is digital and the image is digital, this value is "HasVersion".	DC Relations Value Table	HasFormat]~ HasVersion]~	#####
Catalog	RIL	Related-Image- Identifier/Link	*	N	RIG	The identifier of the related image' Note: maps to XID in Multimedia Metadata Record	Validate. AMICO Inst. Code, period, alpha-numeric, period, 3 char. MIME Type from Value list	AIC_96-34543.tif]~ SFMA.89- 2335.jpg]~	

FIGURE 31K

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Catalog	RNG	Related-Multimedia		Y	Group	Does not contain data; groups fields documenting related multimedia files.		Validate. Null value }~ only.				
Catalog	RND	Related-Multimedia-Description		N	RNG	A description of the related multimedia file. Note: Maps to XDE in Multimedia Metadata Record		no conditions	Interview, in the artist's studio, January 17, 1993;}~ "Fly-Through" movie of the installation seen from three feet above ground;}~ Interpretation offered by the Museum Director in the gallery audio;}~			
Catalog	RNR	Related-Multimedia-Relationship-Type		N	RNG	The relationship between this work and the related multimedia file, expressed using Dublin Core Relationship Types. Note: Inverse in XRT of Multimedia Metadata Record	DC	Validate. DC Relations Type Value Table	References}~ IsVersionOf}~ IsBasedOn}~			
Catalog	RNL	Related-Multimedia-Identifier/Link		N	RNG	The identifier of the related multimedia file. Note: Maps to XID in Multimedia Metadata Record	Inst. Code, period, alpha-numeric, period, 3 char.	Validate. AMICO MILE Type from Value list	SRMA 96-543.mov}~ SDCA 1324:87.1.wav}~ NMAA 67-3452.ogm}~			
Catalog	RDG	Related-Documents		Y	Group	Does not contain data; groups fields describing related documents.		Validate. Null value }~ only.				
Catalog	RDD	Related-Document-Description		N	RDG	The description, or title with full citation, of the related document. Note: Maps to XDE in Multimedia Metadata Record		no conditions.	Johnson, James, "Major Works by Hungarian Artists, London, Ballet & Barley, 1963 p.137-138;}~ The New Reporter, "ART openART closed", June 17, 1989, p.7;}~ transcript of gallery talk at opening, Museum Archives}~			

FIGURE 31L

Catalog	RDR	Related-Document-Relationship-Type		N	RDG	A description of the relationship between the work and the related document, expressed using Dublin Core Relationship Types. Note: inverse of XRT in Multimedia Metadata Record	DC Relations Value Table	Validate. DC Relations Type Value Table References}~
Catalog	RDL	Related-Document-Identifier/Link		N	RDG	The Identifier of the Related Document. Note: maps to XID in Multimedia Metadata Record	Validate. AMICO Inst. Code, period, alpha-numeric, period, 3 char. MIME Type from Value list	WGA_doc1876-45.sgm}~ MIA_newreporter46.gif}~ NMAA_E85-342.btx}~
Who documented it?				Y	Group	Does not contain data; groups fields recording the documentation history of the work.	Validate. Null value only.	Tag changed from DCH to make consistent with other group tags #####
Catalog	DCG	Documentation/Cataloguing-History		N	DCG	The name of the person who documented the work.	no conditions.	Jameson}~ PDT}~ PhotoServices3}~ no repeat within group #####
Catalog	DCB	Documented/Catalogued By		N	DCG	The date the work was documented.	Validate. date YMMDD	19870415}~ no repeat within group #####
Catalog	DCD	Documented/Catalogued-Date						

FIGURE 31M

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Version Control?											
Catalog	AVD	AMICO-Validated Date	*	N		Entered by AMICO. The date the catalog record for a work of art was validated; created by AMICO		date	Validate. YMMDD	19980324j~19980214j~	
Catalog	AW	Validation-Dictionary-Version	*	N		Entered by AMICO. The version of the AMICO data dictionary in which the work is documented.		numeric	Validate. Numeric 1.0j~1.3j~2.1j~		
Catalog	ADP	AMICO Data Processing		Y		Entered by AMICO. A record of any data processing or parsing done by AMICO; includes notes of errors, warnings, and additions through parsing routines.			measurement data parsed; Error - OCT is a required field!		
Catalog	DEL	AMICO Deletion Flag		N		Entered by AMICO. Indicates that a record should be removed from all public distributions of the library. Y=deleted record	flag Y/N		Yj~	added field that tracks record deletion	#####
Catalog	ALY	AMICO Library Year		N		Entered by AMICO. Indicates which library year this record was originally received in.	numeric	Validate. Numeric 4 digits exactly	1998j~1999j~	added field to track when record was originally submitted	#####

FIGURE 31N

Media Metadata	XID	DC.Resource.Identifier	*	N	The identifier of the metadata file. Maps to RIL, RML, or RDL in catalog record. Validation ensures conformity to file naming conventions.	Validate.	MOVIA_39504.TIF AIC_NUMBER.MOV
Media Metadata	XIT	DC.Title	Y		The title or name of the work in the media file; maps to RIL, RML, or RDL in the catalog record.	Front view	
Media Metadata	XCN	DC.Creator	Y	Group	Does not contain date; groups fields documenting the creation of the media file.		
Media Metadata	XCP	DC.Creator.PersonalName	Y	XCN	The Personal Name of the creator of media file		
Media Metadata	XCC	DC.Creator.CorporateName	Y	XCN	The Corporate Name of the Creator of the media file.		
Media Metadata	XCR	DC.Creator.Role	Y	XCN	The role the named creator played in the making of the media file.		

FIGURE 310

Media Metadata	XDE	DC.Description	*	Y	A narrative description of the contents of the media file.				
Media Metadata	XPU	DC.Publisher	*	N	The name of the institution that made the media file available; i.e. the name of the contributing AMCO member.				
Media Metadata	XDN	DC.Contributor		Y	Group Does not contain data; Groups fields documenting other contributions to the creation of the media file.				
Media Metadata	XDP	DC.Contributor. PersonName		Y	XDN The Personal Name of a contributor to the creation of the media file.				
Media Metadata	XDC	DC.Contributor. CorporateName		Y	XDN The Corporate Name of a contributor to the creation of the media file.				
Media Metadata	XDR	DC.Contributor. Role		Y	XDN The role played by the contributor in the creation of the media file.				
Media Metadata	XDA	DC.Date		Y	The date that the media file was created, in the format YYYYMMDD		Validate.		

FIGURE 31P

Media Metadata	XRT	DC.ResourceType	*	N	A "genre-like" term, characterizing the content of the media file. For example, analytical report; critical review; interview; letter; lecture; portrait; reproduction;		reproduction	
Media Metadata	XAM	AMICO.Mode	*	N	A term indicating the modality in which a person will experience the resource. audio; image; model; multimedia; text; video	Validate.	image	# #####
Media Metadata	XFO	DC.Format	Y		Not Used: AMICO records format in specific sub-elements.		group tag	# #####
Media Metadata	XFE	AMICO.Format.Encoding	*	N	XFO The manner in which the data in the media file is encoded. E.g. gif; tiff; jpg; ascii	Validate.	TIFF	group tag added - part of XFO - corrected TIFF in example #####
Media Metadata	XFP	AMICO.Format.ColorPalette		N	XFO The color palette of the media file. E.g. RGB, CMYK, Grayscale		RGB	group tag added - part of XFO #####
Media Metadata	XCM	AMICO.Format.ColorMetric		N	XFO The manner in which the color data is represented; e.g. 24-bit, 8-bit		24-bit	group tag added - part of XFO #####
Media Metadata	XFD	AMICO.Format.Dimensions	*	N	XFO The dimensions of the media file; For an image, the spatial resolution of the image, e.g. 1024 x 768; 640 x 480; etc.		1024 x 768	group tag added - part of XFO #####

FIGURE 31Q

Media Metadata	XFF	AMICO.Format	*	N	XFO	The storage size of the media file.		2.7 MB.		group tag added - part of XFO	#####
Media Metadata	XFC	AMICO.Format	*	N	XFO	The compression algorithm used in storing the media file: none; jpeg; mpeg; etc.	Validate.	JPEG}~ MPEG}~ QT}~	group tag added - part of XFO - corrected delimiters in examples	#####	#####
Media Metadata	XRE	DC.Relation		Y	Group	Does not contain data; used to group fields documenting relationships.					
Media Metadata	XRY	DC.Relation.Type	*	N	XRE	The kind of relationship, expressed as a Dublin Core Relationship type. Note: this is the inverse of the relation in the record pointed to by the Relation.Identifier.	DC Relations	IsFormatOf}~ IsVersionOf}~			
Media Metadata	XRI	DC.Relation.Identifier	*	N	XRE	The identifier of the related work, image, metadata or sound; If within the AMICO Library, this must conform to naming conventions; warning produced if points outside AMICO dataset.	Validate.	AGO_25386v			
Media Metadata	XRS	DC.Rights	*	*	Y	Text of rights statement for this media file.		Copyright Art Institute of Chicago			
Media Metadata	XWN	AMICO.Media.No		N		Capture details and other matters of importance for understanding the quality/content of the digital file.					

FIGURE 31R

PERSISTENT ARCHIVES

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FIGURE 31S

<!-- =====
Auth
\$Id: ;
=====

1. COMBINES amico-objects.dtd and amico-media.dtd into a SINGLE DTD.

2. Defines an ADDITIONAL LEVEL on top of the AMICO elements, corresponding to the abstract classification of AMICO elements in the data dictionary:

am_classification?, What is it?
am_titles, What is it called?
am_appearance?, What does it look like?
am_creators, Who made it?
am_creation_date, When was it made?
am_creation_place?, Where was it made?
am_context?, What is it about?
am_criticism?, What does it mean?
am_exhibitions?, Who showed it?
am_owners, Who owned it?
am_related_works, What is it related to?
am_documenters?, Who documented it?
am_version_control?, Version Control?
am_media_metadata Media Metadata

=====
NAMING CONVENTIONS FOR ELEMENTS:

The AMICO data dictionary has a
o TAG column defining a 3-letter abbreviation, and a
o AMICO-FIELD column with the full name of the field.
These two components make up the XML tag name as follows:
o XYZ_AMICO_FIELD_NAME

For elements which are *groups*, i.e., contain subelements, just one underscore is used.

Example:

- o CLG_classification (group)
- o OTY_object_type (atomic element)

NOTE: OLC is not modeled, as it is listed under 'deleted fields'

=====
MULTIPLICITY OF ELEMENTS IN DTDs:

- * = zero-or-more
- + = one-or-more
- ? = zero-or-one
- otherwise: exactly one

NOTE: OLC is not modeled, as it is listed under 'deleted fields'

| |
|-----|
| 32A |
| 32B |
| 32C |
| 32D |
| 32E |
| 32F |
| 32G |
| 32H |
| 32I |
| 32J |
| 32K |

FIGURE 32A

```
===== -->

<!ELEMENT am_objects (am_object*) >

<!ELEMENT am_object (
  AID_amico_identifier,
  am_classification?,
  am_titles,
  am_appearance?,
  am_creators,
  am_creation_dates,
  am_creation_place?,
  am_context?,
  am_criticism?,
  am_exhibitions?,
  am_owners,
  am_related_works?,
  am_documenters?,
  am_version_control?,
  am_media_metadata
)>

<!ELEMENT am_classification (
  OTY_object_type*,
  OPP_object_parts_pieces*,
  CLG_classification*
)>

<!ELEMENT CLG_classification (
  CLS_classification_scheme?,
  CLT_classification_term?
)>

<!ELEMENT am_titles (
  OTG_object_title_name+,
  OST_state*,
  OEN_edition*
)>

<!ELEMENT OTG_object_title_name (
  OTN_object_title_name?,
  OTT_title_type*
)>
```

FIGURE 32B

```
<!ELEMENT am_appearance (  
    OPD_physical_description?,  
    OPA_physical_orientation_arrangement?,  
    MET_measurements_text*,  
    MEG_measurements*,  
    OMG_materials_and_techniques*,  
    OIN_inscriptions_and_or_marks*,  
    OCH_condition_examination_history*,  
    OTH_treatment_conservation_history*  
>  
  
<!ELEMENT MEG_measurements (  
    MCM_measurement_component_measured?,  
    MED_measurement_dimension?,  
    MDV_measurement_dimension_value?,  
    MDU_measurement_dimension_units?,  
    MEQ_measurement_qualifier?  
>  
  
<!ELEMENT OMG_materials_and_techniques (  
    OMD_materials_and_techniques_description?,  
    OMT_materials_and_techniques_process_technique_term*,  
    OMM_materials_and_techniques_materials_term*,  
    OMS_materials_and_techniques_support*  
>  
  
<!ELEMENT am_creators (  
    CRG_creator*  
>  
  
<!ELEMENT CRG_creator (  
    CRQ_creator_qualifier?,  
    CRT_creator_name_text,  
    CRN_creator_name?,  
    CRC_creator_culture_nationality?,  
    CDT_creator_dates_locations_text?,  
    CBD_creator_birth_date?,  
    CBP_creator_birth_place?,  
    CBQ_creator_birth_qualifier?,  
    CDD_creator_death_date?,  
    CDP_creator_death_place?,  
    CDQ_creator_death_qualifier?,  
    CAD_creator_active_date?,  
    CAP_creator_active_place*,  
    CGN_creator_gender?,  
    CRB_creator_biography?,  
    CRR_creator_role*,  
    CNO_creator_notes?  
>
```

FIGURE 32C

```
<!ELEMENT am_creation_dates (  
    OCG_creation_dates*  
>  
  
<!ELEMENT OCG_creation_dates (  
    OCT_creation_date_text,  
    OCS_creation_date_start?,  
    OCE_creation_date_end?,  
    OCQ_creation_date_qualifier?  
>  
  
<!ELEMENT am_creation_place (  
    OCP_creation_place*  
>  
  
<!ELEMENT am_context (  
    STG_style_period*,  
    SUG_subject_matter*,  
    CXG_context*  
>  
  
<!ELEMENT STG_style_period (  
    STD_style_period_description?,  
    STT_style_period_terms*  
>  
  
<!ELEMENT SUG_subject_matter (  
    SUP_subject_matter_preiconographic_description?,  
    SUI_subject_matter_iconography*,  
    SUT_subject_matter_index_terms*  
>  
  
<!ELEMENT CXG_context (   
    CXD_context_description?,  
    CXP_context_related_person*,  
    CXS_context_related_site_place*,  
    CXT_context_time_period_dates?  
>  
  
<!ELEMENT am_criticism (  
    OCR_critical_responses*  
>  
  
<!ELEMENT am_exhibitions (   
    OEH_exhibition_or_loan_history*  
>  
  
<!ELEMENT am_owners (   
    OOG_owner*,  
    OPO_provenance_prior_owners_text*,  
    ORG_rights_copyright*  
>
```

FIGURE 32D

```
<!ELEMENT OOG_owner (
    OON_owner_name,
    OOP_owner_place*,
    OOA_owner_accession_number*,
    OOC_owner_credit_line+
)>

<!ELEMENT ORG_rights_copyright (
    ORS_copyright_statement,
    ORL_copyright_link?
)>

<!ELEMENT am_related_works (
    RWG_related_works_of_art*,
    RIG_related_images*,
    RMG_related_multimedia*,
    RDG_related_documents*
)>

<!ELEMENT RWG_related_works_of_art (
    RWD_related_works_description?,
    RWR_related_works_relationship_type?,
    RWL_related_works_identifier_link?
)>

<!ELEMENT RIG_related_images (
    RIP_related_image_preferred?,
    RID_related_image_description?,
    RIR_related_image_relationship_type?,
    RIL_related_image_identifier_link?
)>

<!ELEMENT RMG_related_multimedia (
    RMD_related_multimedia_description?,
    RMR_related_multimedia_relationship_type?,
    RML_related_multimedia_identifier_link?
)>

<!ELEMENT RDG_related_documents (
    RDD_related_document_description?,
    RDR_related_document_relationship_type?,
    RDL_related_document_identifier_link?
)>

<!ELEMENT am_documenters (
    DCG_documentation_cataloguing_history*
)>

<!ELEMENT DCG_documentation_cataloguing_history (
    DCB_documented_catalogued_by?,
    DCD_documented_catalogued_date?
)>
```

FIGURE 32E

```
<!ELEMENT am_version_control (  
    AVD_amico_validated_date?,  
    AVV_validation_dictionary_version?,  
    ADP_amico_data_processing*,  
    DEL_amico_deletion_flag?,  
    ALY_amico_library_year?  
)>  
  
<!-- ===== MEDIA METADATA ===== -->  
  
<!ELEMENT am_media_metadata (  
    XID_dc_resource_identifier?,  
    XTI_dc_title*,  
    XCN_dc_creator*,  
    XDE_dc_description*,  
    XPU_dc_publisher?,  
    XDN_dc_contributor*,  
    XDA_dc_date*,  
    XRT_dc_resourcetype?,  
    XAM_amico_mode?,  
    XFO_dc_format*,  
    XRE_dc_relation*,  
    XRS_dc_rights+,  
    XMN_amico_media_note?,  
    XVD_amico_metadata_validation_date?,  
    XVV_amico_data_dictionary_version?,  
    XPR_metadata_data_processing_note*,  
    XDL_metadata_deletion_flag?,  
    XLY_metadata_library_year?  
)>  
  
<!ELEMENT XCN_dc_creator (  
    XCP_dc_creator_personalname*,  
    XCC_dc_creator_corporatename*,  
    XCR_dc_creator_role*  
)>  
  
<!ELEMENT XDN_dc_contributor (   
    XDP_dc_contributor_personalname*,  
    XDC_dc_contributor_corporatename*,  
    XDR_dc_contributor_role*  
)>  
  
<!ELEMENT XFO_dc_format (   
    XFE_amico_format_encoding?,  
    XFP_amico_format_colorpalette?,  
    XCM_amico_format_colormetric?,  
    XFD_amico_format_dimensions?,  
    XFF_amico_format_filesize?,  
    XFC_amico_format_compression?  
)>
```

FIGURE 32F

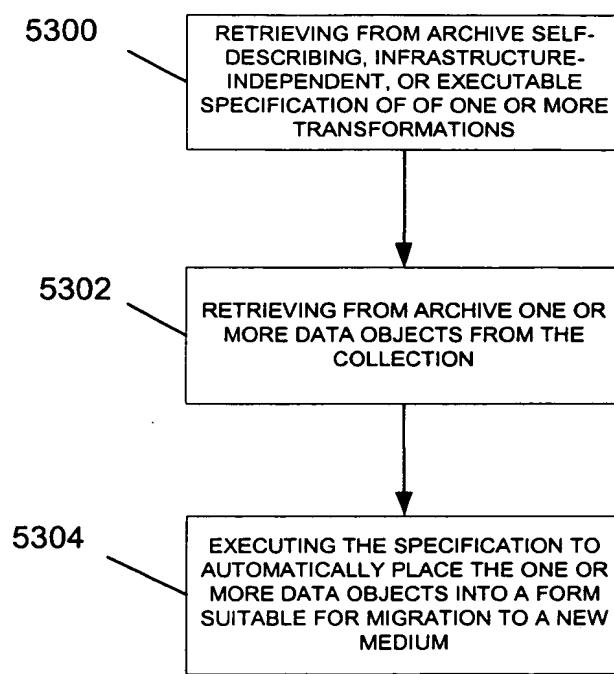


FIGURE 53

```
<!ELEMENT XRE_dc_relation (  
    XRY_dc_relation_type?,  
    XRI_dc_relation_identifier?  
>
```

```
<!-- ===== ATOMIC ELEMENTS ===== -->
```

```
<!ELEMENT ADP_amico_data_processing (#PCDATA)>  
<!ELEMENT AID_amico_identifier (#PCDATA)>  
<!ELEMENT ALY_amico_library_year (#PCDATA)>  
<!ELEMENT AVD_amico_validated_date (#PCDATA)>  
<!ELEMENT AVV_validation_dictionary_version (#PCDATA)>  
<!ELEMENT CAD_creator_active_date (#PCDATA)>  
<!ELEMENT CAP_creator_active_place (#PCDATA)>  
<!ELEMENT CBD_creator_birth_date (#PCDATA)>  
<!ELEMENT CBP_creator_birth_place (#PCDATA)>  
<!ELEMENT CBQ_creator_birth_qualifier (#PCDATA)>  
<!ELEMENT CDD_creator_death_date (#PCDATA)>  
<!ELEMENT CDP_creator_death_place (#PCDATA)>  
<!ELEMENT CDQ_creator_death_qualifier (#PCDATA)>  
<!ELEMENT CDT_creator_dates_locations_text (#PCDATA)>  
<!ELEMENT CGN_creator_gender (#PCDATA)>  
<!ELEMENT CLS_classification_scheme (#PCDATA)>  
<!ELEMENT CLT_classification_term (#PCDATA)>  
<!ELEMENT CNO_creator_notes (#PCDATA)>  
<!ELEMENT CRB_creator_biography (#PCDATA)>  
<!ELEMENT CRC_creator_culture_nationality (#PCDATA)>  
<!ELEMENT CRN_creator_name (#PCDATA)>  
<!ELEMENT CRQ_creator_qualifier (#PCDATA)>  
<!ELEMENT CRR_creator_role (#PCDATA)>
```

```
<!ELEMENT CRT__creator_name_text (#PCDATA)>
<!ELEMENT CXD__context_description (#PCDATA)>
<!ELEMENT CXP__context_related_person (#PCDATA)>
<!ELEMENT CXS__context_related_site_place (#PCDATA)>
<!ELEMENT CXT__context_time_period_dates (#PCDATA)>
<!ELEMENT DCB__documented_catalogued_by (#PCDATA)>
<!ELEMENT DCD__documented_catalogued_date (#PCDATA)>
<!ELEMENT DEL__amico_deletion_flag (#PCDATA)>
<!ELEMENT
MCM__measurement_component_measured (#PCDATA)>
<!ELEMENT MDU__measurement_dimension_units (#PCDATA)>
<!ELEMENT MDV__measurement_dimension_value (#PCDATA)>
<!ELEMENT MED__measurement_dimension (#PCDATA)>
<!ELEMENT MEQ__measurement_qualifier (#PCDATA)>
<!ELEMENT MET__measurements_text (#PCDATA)>
<!ELEMENT OCE__creation_date_end (#PCDATA)>
<!ELEMENT OCH__condition_examination_history (#PCDATA)>
<!ELEMENT OCP__creation_place (#PCDATA)>
<!ELEMENT OCQ__creation_date_qualifier (#PCDATA)>
<!ELEMENT OCR__critical_responses (#PCDATA)>
<!ELEMENT OCS__creation_date_start (#PCDATA)>
<!ELEMENT OCT__creation_date_text (#PCDATA)>
<!ELEMENT OEH__exhibition_or_loan_history (#PCDATA)>
<!ELEMENT OEN__edition (#PCDATA)>
<!ELEMENT OIN__inscriptions_and_or_marks (#PCDATA)>
```

FIGURE 32H

```
<!ELEMENT OMD__materials_and_techniques_description
          (#PCDATA)>
<!ELEMENT OMM__materials_and_techniques_materials_term
          (#PCDATA)>
<!ELEMENT OMS__materials_and_techniques_support
          (#PCDATA)>
<!ELEMENT OMT__materials_and_techniques_process_technique_term
          (#PCDATA)>
<!ELEMENT OOA__owner_accession_number
          (#PCDATA)>
<!ELEMENT OOC__owner_credit_line
          (#PCDATA)>
<!ELEMENT OON__owner_name
          (#PCDATA)>
<!ELEMENT OOP__owner_place
          (#PCDATA)>
<!ELEMENT OPA__physical_orientation_arrangement
          (#PCDATA)>
<!ELEMENT OPD__physical_description
          (#PCDATA)>
<!ELEMENT OPO__provenance_prior_owners_text
          (#PCDATA)>
<!ELEMENT OPP__object_parts_pieces
          (#PCDATA)>
<!ELEMENT ORL__copyright_link
          (#PCDATA)>
<!ELEMENT ORS__copyright_statement
          (#PCDATA)>
<!ELEMENT OST__state
          (#PCDATA)>
<!ELEMENT OTH__treatment_conservation_history
          (#PCDATA)>
<!ELEMENT OTN__object_title_name
          (#PCDATA)>
<!ELEMENT OTT__title_type
          (#PCDATA)>
<!ELEMENT OTY__object_type
          (#PCDATA)>
<!ELEMENT RDD__related_document_description
          (#PCDATA)>
<!ELEMENT RDL__related_document_identifier_link
          (#PCDATA)>
<!ELEMENT RDR__related_document_relationship_type
          (#PCDATA)>
<!ELEMENT RID__related_image_description
          (#PCDATA)>
<!ELEMENT RIL__related_image_identifier_link
          (#PCDATA)>
<!ELEMENT RIP__related_image_preferred
          (#PCDATA)>
```

FIGURE 32I

```
<!ELEMENT RIR__related_image_relationship_type
          (#PCDATA)>
<!ELEMENT RMD__related_multimedia_description
          (#PCDATA)>
<!ELEMENT RML__related_multimedia_identifier_link
          (#PCDATA)>
<!ELEMENT RMR__related_multimedia_relationship_type
          (#PCDATA)>
<!ELEMENT RWD__related_works_description
          (#PCDATA)>
<!ELEMENT RWL__related_works_identifier_link
          (#PCDATA)>
<!ELEMENT RWR__related_works_relationship_type
          (#PCDATA)>
<!ELEMENT STD__style_period_description
          (#PCDATA)>
<!ELEMENT STT__style_period_terms
          (#PCDATA)>
<!ELEMENT SUI__subject_matter_iconography
          (#PCDATA)>
<!ELEMENT SUP__subject_matter_preiconographic_description
          (#PCDATA)>
<!ELEMENT SUT__subject_matter_index_terms
          (#PCDATA)>
<!-- ===== MEDIA METADATA =====
>

<!ELEMENT XAM__amico_mode
          (#PCDATA)>
<!ELEMENT XCC__dc_creator_corporatename
          (#PCDATA)>
<!ELEMENT XCM__amico_format_colormetric
          (#PCDATA)>
<!ELEMENT XCP__dc_creator_personalname
          (#PCDATA)>
<!ELEMENT XCR__dc_creator_role
          (#PCDATA)>
<!ELEMENT XDA__dc_date
          (#PCDATA)>
<!ELEMENT XDC__dc_contributor_corporatename
          (#PCDATA)>
<!ELEMENT XDE__dc_description
          (#PCDATA)>
<!ELEMENT XDL__metadata_delition_flag
          (#PCDATA)>
<!ELEMENT XDP__dc_contributor_personalname
          (#PCDATA)>
<!ELEMENT XDR__dc_contributor_role
          (#PCDATA)>
<!ELEMENT XFC__amico_format_compression
          (#PCDATA)>
<!ELEMENT XFD__amico_format_dimensions
          (#PCDATA)>
```

FIGURE 32J

```
<!ELEMENT XFE__amico_format_encoding
          (#PCDATA)>
<!ELEMENT XFF__amico_format_filesize
          (#PCDATA)>
<!ELEMENT XFP__amico_format_colorpalette
          (#PCDATA)>
<!ELEMENT XID__dc_resource_identifier
          (#PCDATA)>
<!ELEMENT XLY__metadata_library_year
          (#PCDATA)>
<!ELEMENT XMN__amico_media_note
          (#PCDATA)>
<!ELEMENT XPR__metadata_data_processing_note
          (#PCDATA)>
<!ELEMENT XPU__dc_publisher
          (#PCDATA)>
<!ELEMENT XRI__dc_relation_identifier
          (#PCDATA)>
<!ELEMENT XRS__dc_rights
          (#PCDATA)>
<!ELEMENT XRT__dc_resourcetype
          (#PCDATA)>
<!ELEMENT XRY__dc_relation_type
          (#PCDATA)>
<!ELEMENT XTI__dc_title
          (#PCDATA)>
<!ELEMENT XVD__amico_metadata_validation_date
          (#PCDATA)>
<!ELEMENT XVV__amico_data_dictionary_version
          (#PCDATA)>
```

TAGGED
XML

**RAW DATA
RECORD**

FIGURE 33

APPLICATION OF XSL STYLE SHEETS

2. XSL Style Sheet Script

3. *Rendered Output*

FIGURE 34

```
#!/usr/local/bin/perl -w
use strict;

#####
# amico2xml AMICO records to XML conversion
# Author: Bertram Ludaescher <ludaesch@sdsc.edu>
#
# call: amico2xml file
# returns: XML-ified version
#
# 2do: extend escXML, handling of binary data
# $Id: amico2xml,v 1.1 1999/04/06 08:43:40 ludaesch Exp $
#####

my $output;      # handle for current output stream
my @record = (); # current record (= array of fields)
my $tab = 2;      # current output tab position

sub ind {          # indent according to current tab position
    return " " x $tab
}

my %long_tag =      # hash of defined tags (long names currently
    # not used)
(
    "ADP" => "ADP_amico_data_processing",
    "AID" => "AID_amico_identifier",
    "ALY" => "ALY_amico_library_year",
    "AVD" => "AVD_amico_validated_date",
    "AVV" => "AVV_validation_dictionary_version",
    "CAD" => "CAD_creator_active_date",
    "CAP" => "CAP_creator_active_place",
    "CBD" => "CBD_creator_birth_date",
    "CBP" => "CBP_creator_birth_place",
    "CBQ" => "CBQ_creator_birth_qualifier",
    "CDD" => "CDD_creator_death_date",
    "CDP" => "CDP_creator_death_place",
    "CDQ" => "CDQ_creator_death_qualifier",
    "CDT" => "CDT_creator_dates_locations_text",
    "CGN" => "CGN_creator_gender",
    "CLG" => "CLG_classification",
    "CLS" => "CLS_classification_scheme",
    "CLT" => "CLT_classification_term",
    "CNO" => "CNO_creator_notes",
    "CRB" => "CRB_creator_biography",
    "CRC" => "CRC_creator_culture_nationality",
```

| |
|-----|
| 35A |
| 35B |
| 35C |
| 35D |
| 35E |
| 35F |
| 35G |

FIGURE 35A

"CRG" => "CRG_creator",
"CRN" => "CRN_creator_name",
"CRQ" => "CRQ_creator_qualifier",
"CRR" => "CRR_creator_role",
"CRT" => "CRT_creator_name_text",
"CXD" => "CXD_context_description",
"CXG" => "CXG_context",
"CXP" => "CXP_context_related_person",
"CXS" => "CXS_context_related_site_place",
"CXT" => "CXT_context_time_period_dates",
"DCB" => "DCB_documented_catalogued_by",
"DCD" => "DCD_documented_catalogued_date",
"DCG" => "DCG_documentation_cataloguing_history",
"DEL" => "DEL_amico_deletion_flag",
"MCM" => "MCM_measurement_component_measured",
"MDU" => "MDU_measurement_dimension_units",
"MDV" => "MDV_measurement_dimension_value",
"MED" => "MED_measurement_dimension",
"MEG" => "MEG_measurements",
"MEQ" => "MEQ_measurement_qualifier",
"MET" => "MET_measurements_text",
"OCE" => "OCE_creation_date_end",
"OCG" => "OCG_creation_dates",
"OCH" => "OCH_condition_examination_history",
"OCP" => "OCP_creation_place",
"OCQ" => "OCQ_creation_date_qualifier",
"OCR" => "OCR_critical_responses",
"OCS" => "OCS_creation_date_start",
"OCT" => "OCT_creation_date_text",
"OEH" => "OEH_exhibition_or_loan_history",
"OEN" => "OEN_edition",
"OIN" => "OIN_inscriptions_and_or_marks",
"OMD" => "OMD_materials_and_techniques_description",
"OMG" => "OMG_materials_and_techniques",
"OMM" => "OMM_materials_and_techniques_materials_term",
"OMS" => "OMS_materials_and_techniques_support",
"OMT" => "OMT_materials_and_techniques_process_technique_term",
"OOA" => "OOA_owner_accession_number",
"OOC" => "OOC_owner_credit_line",
"OOG" => "OOG_owner",
"OON" => "OON_owner_name",
"OOP" => "OOP_owner_place",
"OPA" => "OPA_physical_orientation_arrangement",
"OPD" => "OPD_physical_description",
"OPO" => "OPO_provenance_prior_owners_text",
"OPP" => "OPP_object_parts_pieces",
"ORG" => "ORG_rights_copyright",
"ORL" => "ORL_copyright_link",
"ORS" => "ORS_copyright_statement",
"OST" => "OST_state",
"OTG" => "OTG_object_title_name",
"OTH" => "OTH_treatment_conservation_history",

FIGURE 35B

"OTN" => "OTN_object_title_name",
"OTT" => "OTT_title_type",
"OTY" => "OTY_object_type",
"RDD" => "RDD_related_document_description",
"RDG" => "RDG_related_documents",
"RDL" => "RDL_related_document_identifier_link",
"RDR" => "RDR_related_document_relationship_type",
"RID" => "RID_related_image_description",
"RIG" => "RIG_related_images",
"RIL" => "RIL_related_image_identifier_link",
"RIP" => "RIP_related_image_preferred",
"RIR" => "RIR_related_image_relationship_type",
"RMD" => "RMD_related_multimedia_description",
"RMG" => "RMG_related_multimedia",
"RML" => "RML_related_multimedia_identifier_link",
"RMR" => "RMR_related_multimedia_relationship_type",
"RWD" => "RWD_related_works_description",
"RWG" => "RWG_related_works_of_art",
"RWL" => "RWL_related_works_identifier_link",
"RWR" => "RWR_related_works_relationship_type",
"STD" => "STD_style_period_description",
"STG" => "STG_style_period",
"STT" => "STT_style_period_terms",
"SUG" => "SUG_subject_matter",
"SUI" => "SUI_subject_matter_iconography",
"SUP" => "SUP_subject_matter_preiconographic_description",
"SUT" => "SUT_subject_matter_index_terms",
"XAM" => "XAM_amico_mode",
"XCC" => "XCC_dc_creator_corporatename",
"XCM" => "XCM_amico_format_colormetric",
"XCN" => "XCN_dc_creator",
"XCP" => "XCP_dc_creator_personalname",
"XCR" => "XCR_dc_creator_role",
"XDA" => "XDA_dc_date",
"XDC" => "XDC_dc_contributor_corporatename",
"XDE" => "XDE_dc_description",
"XDL" => "XDL_metadata_deletion_flag",
"XDN" => "XDN_dc_contributor",
"XDP" => "XDP_dc_contributor_personalname",
"XDR" => "XDR_dc_contributor_role",
"XFC" => "XFC_amico_format_compression",
"XFD" => "XFD_amico_format_dimensions",
"XFE" => "XFE_amico_format_encoding",
"XFF" => "XFF_amico_format_filesize",
"XFO" => "XFO_dc_format",
"XFP" => "XFP_amico_format_colorpalette",
"XID" => "XID_dc_resource_identifier",
"XLY" => "XLY_metadata_library_year",
"XMN" => "XMN_amico_media_note",
"XPR" => "XPR_metadata_data_processing_note",
"XPU" => "XPU_dc_publisher",

FIGURE 35C

```
"XRI" => "XRI_dc_relation_identifier",
"XRS" => "XRS_dc_rights",
"XRT" => "XRT_dc_resourcetype",
"XRY" => "XRY_dc_relation_type",
"XTI" => "XTI_dc_title",
"XVD" => "XVD_amico_metadata_validation_date",
"XVV" => "XVV_amico_data_dictionary_version"
);

sub name {      # long or short tagnames
    return $_[0]          # short
#    return $long_tag{$_[0]} # long
}

my %is_group = (); # what tags are groups?

while ((my $tag, my $long) = each %long_tag) {
    $is_group{$tag} = 1 if ($long !~ /__/);
}

my %group_members =  # members of each group
(
    "CLG" => "CLS CLT",
    "CRG" => "CRQ CRT CRN CRC CDT CBD CBP CBQ CDD CDP CDQ CAD CAP CGN CRB CRR
CNO",
    "CXG" => "CXD CXP CXS CXT",
    "DCG" => "DCB DCD",
    "MEG" => "MCM MED MDV MDU MEQ",
    "OCG" => "OCT OCS OCE OCQ",
    "OMG" => "OMD OMT OMM OMS",
    "OOG" => "OON OOP OOA OOC",
    "ORG" => "ORS ORL",
    "OTG" => "OTN OTT",
    "RDG" => "RDD RDR RDL",
    "RIG" => "RIP RID RIR RIL",
    "RMG" => "RMD RMR RML",
    "RWG" => "RWD RWR RWL",
    "STG" => "STD STT",
    "SUG" => "SUP SUI SUT",
    "XCN" => "XCP XCC XCR",
    "XDN" => "XDP XDC XDR",
    "XFO" => "XFE XFP XCM XFD XFF XFC",
    "XRE" => "XRY XRI"
);
```

FIGURE 35D

```

my %group = ();           # inverse: returns the group of a member

while ((my $group, my $memstr) = each %group_members) {
    my @members = ($memstr =~ m/[A-Z]{3}/g);
    foreach (@members) {
        $group{$_} = $group;
    }
}

sub escXML {           # escape characters: EXTEND/FIX!
    $_[0];
    s/</&lt;/g;
    s/&/&#38;/g;
    s/á/a/g;
    s/à/a/g;
    s/â/a/g;
    s/é/e/g;
    s/è/e/g;
    s/ñ/n/g;
    $_[0];
}

sub output_fields {  # output all fields from current record
    @record = @_;
    my $field = shift @record;      # get the next field
    if (defined $field) {
        &output_field($field);      # output it (and more if group!)
        &output_fields(@record);    # recurse through the remains
                                    # of @record
    }
}

sub output_field {  # output the given field PLUS follow-up group
                    # members!
    (my $field) = @_;
    if ($field =~ /([A-Z]{3})(.*)/) {    # is it a 3 letter tag + data?
        my $tag = $1; my $data = $2;
        if ($long_tag{$tag}) {           # do we know this tag?
            if ($is_group{$tag}) {      # is it a group?
                print &ind, "<", &name($tag), ">\n";
                $tab +=2 ;
                &output_group($tag);      # and output closing tag!
            }
            else {                    # it's a simple recognized tag
                print &ind, "<", &name($tag), ">",
                    &escXML($data),
                    "</", &name($tag), ">\n";
            }
        } else {                    # don't know this tag!
            print "<am_ERROR type = \"unrecognized tag\">";
            print &ind, "<$tag>", &escXML($data), "</$tag>\n";
            print "</am_ERROR>\n";
        }
    }
}

```

FIGURE 35E

```
} else {                      # don't understand that field!
    print "<am_ERROR type = \"unrecognized field\">", $_;
    print "</am_ERROR>\n";
}

sub output_group { # output fields WHILE in same group
    (my $grp) = @_;
    my $field = shift @record;      # get the next field
    if (defined $field) {
        if ($field =~ /([A-Z]{3})/) {# should be a tag
            if (defined $group{$1} and $group{$1} eq $grp) {
                # still in the same group??
                &output_field($field);
                &output_group($grp);      # STAY in the same group
            } else {                  # LEAVE group!
                $tab -= 2;
                print &ind, "</", &name($grp), ">\n";    # closing tag for group
                &output_field($field);
            }
        } else {                  # don't understand that field!
            print "<am_ERROR type = \"unrecognized field\">", $_;
            print "</am_ERROR>\n";
        }
    }                                # empty @record => done
}

sub get_record {    # read the next record and return first tag
    chomp;
    @record = split /\}~;/;          # End-Of-Record = "|\n"
    my $last = pop(@record);        # get EOR
    if ($last ne "|") {            # ...and check
        print STDOUT "**** ERROR: unknown delimiter <$last>\n";
    }
    if (@record) {                # check if non-empty
        return substr($record[0],0,3)  # return the tag name
    } else {
        print STDOUT "**** WARNING: empty record\n";
        return 0
    }
}
```

FIGURE 35F

```
#=====
#  M A I N
#=====

$|=1;

open(AM_OBJS, ">amico_objects.xml") or die "**** ERROR <@_>\n<$?>\n";
open(AM_MEDIA, ">amico_media.xml") or die "**** ERROR <@_>\n<$?>\n";

print AM_OBJS <<EOF;
<am_objects>
EOF

print AM_MEDIA <<EOF;
<am_media>
EOF

# print AM_OBJS <<EOF;
# <?xml:stylesheet type="text/xsl" href="amico_objects.xsl"?>
# <am_objects>
# EOF

# print AM_MEDIA <<EOF;
# <?xml:stylesheet type="text/xsl" href="amico_media.xsl"?>
# <am_media>
# EOF

while (<>){
    if (my $tag = &get_record) {           # get next record and tag name
        if ($tag eq "AID") {
            select(AM_OBJS);
            print &ind, "<am_object>\n";
            $tab += 2;
            &output_fields(@record) ;
            $tab -= 2;
            print &ind, "</am_object>\n";
        } elsif ($tag eq "XID") {
            select(AM_MEDIA);
            print &ind, "<am_media_metadata>\n";
            $tab += 2;
            &output_fields(@record) ;
            $tab -= 2;
            print &ind, "</am_media_metadata>\n";
        } else {
            print STDOUT "**** ERROR: unknown tag <$tag> in record: <@record>\n";
        }
    } else {
        print STDOUT "**** ERROR: get_record failed\n";
    }
}

print AM_OBJS "</am_objects>\n";
print AM_MEDIA "</am_media>\n";
```

FIGURE 35G

```

-----
# Perl Script to convert XML SLA version
# into software independent OAV
# representation, ready to be # loaded
# into a variety of engines:
#     - Prolog engine, or
#     - relational database engine, or
#     - XML database engine, or
#     - other
#
# SCRIPT devised by Richard Marciano &
#     Bertram Ludaescher &
#         Reagan Moore
# August 20, 2000, copyright RiM + BL + ReM
-----

#!/usr/local/bin/perl
use strict;

-----
@boa; %boatype_hash = (); my $bill_count = 0;
my $amdt_count = 0; my $con_res_count = 0;
my $j_res_count = 0; my $res_count = 0;

@a; %a_value = ();
@congressional_record; %cr_value = ();
@cosponsors; %cs_value = (); @date_introduced;
    %di_value = (); @digest; %d_value = ();
@latest_status; %ls_value = (); @status_actions;
    %sa_value = (); @official_title; %ot_value = ();
@sponsor; %s_value = (); @statement_of_purpose;
    %sop_value = (); @submitted_by; %sb_value = ();
@submitted_for; %sf_value = (); @filename_senator;
@filename_period; @prepared_by; @senator;
@occurrence_section; @occurrence_committee;

@topic_index; %ti_value= ();
-----

my $MORE_SIZE = 20;

my $bill_index_2 = "";
my %tempH = ();

my $line; my $h1; my $h2 = ""; my $h3; my $h4; my $h5; my $h6_1 = ""; my $h6_2
= "";
my $prev_h2 = "";
my $section = 0; my $committee = "";
my $senNAME = ""; my $state = ""; my $senid;

my $filename;
my $line_number;

```

| | |
|-----|-----|
| 36A | 36N |
| 36B | 36O |
| 36C | 36P |
| 36D | 36Q |
| 36E | 36R |
| 36F | 36S |
| 36G | 36T |
| 36H | 36U |
| 36I | 36V |
| 36J | 36W |
| 36K | 36X |
| 36L | 36Y |
| 36M | 36Z |

FIGURE 36A

```
my @allfile;

opendir THISDIR , "XMLDATA" or die "can't find DIRECTORY: $!";
@allfile = grep /_LAR/, readdir THISDIR;
closedir THISDIR;
open( LOG, ">logfile" ) || die "*ERROR: can't open logfile\n" ;

=====
=====

foreach my $sen (@allfile) {

#my $sen = "D_$ARGV[1]_LARSARGV[0]_106.xml";
#my $sen = "D_1CP_LAR_S106_106.xml";
#my $sen = "D_1CP_LAR_S216_106.xml";
#my $sen = "D_1_LARI_S272_106.xml";

$sen =~ m/.+\.+\.+\.+\.S(\d+)\.+/;
$senid = $1;
$senid = $1;
$senNAME = "";

$filename = $sen;
$line_number = 0;

open( SEN106, "XMLDATA/$sen" ) || die "*ERROR: can't open $sen\n" ;
#open( SEN106, "$sen" ) || die "*ERROR: can't open $sen\n" ;

&process_header( $sen );

N1:while( $line = <SEN106> ) {
    $line_number++;
N2:
    # DETECT SECTION headers
    if ( $line =~ m/hidden="on">(.+)<\/string>/ ) {
        $h1 = $1;
# <p align="left" bold="on"><string bold="on">SECTION I. SPONSORED
MEASURES</string></p>
        if ( $h1 =~ m/SECTION I\./ ) {
            $section = 1; $h6_1 = ""; $h6_2 = "";
            my $ov = $senid . "_" . "$line_number";
            my $len = $#occurrence_section;
            $occurrence_section[ $len + 1 ] = [ ($senid, $line_number,
$section, $h1) ];
        }
        elsif ( $h1 =~ m/SECTION II\./ ) {
            $section = 2; $h6_1 = ""; $h6_2 = "";
            my $ov = $senid . "_" . "$line_number";
        }
    }
}
```

FIGURE 36B

```

        elsif ( $h1 == m/SECTION IV\./ ) {
            $section = 4;

            my $ov = $senid . "_" . "$line_number";

            my $len = $#occurrence_section;
            $occurrence_section[ $len + 1 ] = [ ($senid, $line_number,
$section, $h1) ];
        }
        elsif ( $h1 == m/SECTION V\./ ) {
            $section = 5; $h6_1 = ""; $h6_2 = "";

            my $ov = $senid . "_" . "$line_number";

            my $len = $#occurrence_section;
            $occurrence_section[ $len + 1 ] = [ ($senid, $line_number,
$section, $h1) ];
        }
        elsif ( $h1 == m/SECTION VI\./ ) {
            $section = 6; $h6_1 = ""; $h6_2 = "";

            my $ov = $senid . "_" . "$line_number";

            my $len = $#occurrence_section;
            $occurrence_section[ $len + 1 ] = [ ($senid, $line_number,
$section, $h1) ];
        }
        elsif ( $h1 == m/SECTION VII\./ ) {
            $section = 7; $h6_1 = ""; $h6_2 = "";

            my $ov = $senid . "_" . "$line_number";

            my $len = $#occurrence_section;
            $occurrence_section[ $len + 1 ] = [ ($senid, $line_number,
$section, $h1) ];

            &process_index;
        }
        else {
            print LOG "!!! error:COULD NOT RECOGNIZE SECTION NUMBER !!!!\n";
        }
    }

# DETECT **** BILL NUMBERS
elsif ( $line == m/>\*/*\*/*\* (.+)<\p>/ ) {
    $h2 = $1;
    $h2 =~ s/\s*/g;

    if ( $prev_h2 ne "" ) {
        S.123           1 dot
        S.Amtd.123    2 dots
    }
}

```

FIGURE 36C

```

        $boatype_hash{ bill }{ $bill }++;
    }
}
else {
    if( $list[1] eq "Amdt" ) {
        $amdt_count++;

        my $bill;
        foreach $bill ( sort keys %{$tempH{$prev_h2}} ) {
            if ( $boatype_hash{ amdt }{ $bill } eq "" ) {
                $boatype_hash{ amdt }{ $bill } = 0;
            }
            $boatype_hash{ amdt }{ $bill }++;
        }
    }
    elsif( $list[1] eq "Con" ) {
        $con_res_count++;

        foreach my $bill ( sort keys %{$tempH{$prev_h2}} ) {
            if ( $boatype_hash{ con_res }{ $bill } eq "" ) {
                $boatype_hash{ con_res }{ $bill } = 0;
            }
            $boatype_hash{ con_res }{ $bill }++;
        }
    }
    elsif( $list[1] eq "J" ) {
        $j_res_count++;

        foreach my $bill ( sort keys %{$tempH{$prev_h2}} ) {
            if ( $boatype_hash{ j_res }{ $bill } eq "" ) {
                $boatype_hash{ j_res }{ $bill } = 0;
            }
            $boatype_hash{ j_res }{ $bill }++;
        }
    }
    elsif( $list[1] eq "Res" ) {
        $res_count++;

        foreach my $bill ( sort keys %{$tempH{$prev_h2}} ) {
            if ( $boatype_hash{ res }{ $bill } eq "" ) {
                $boatype_hash{ res }{ $bill } = 0;
            }
            $boatype_hash{ res }{ $bill }++;
        }
    }
    else {
        print "$prev_h2\tERROR in recording boatype_hash\n";
    }
}
$list = "";
}
$prev_h2 = $h2;

```

FIGURE 36D

```
# SKIP OVER header SECTIONS
<header>
#<p align="center" bold="on" italic="off"><field><fldinst> PAGE
</fldinst><fldrslt><string charstynname="" bold="on" italic="off">2</string>
#      </fldrslt></field></p>
#<p align="right" bold="on" italic="off"><string bold="on" italic="off">Paul
S. Sarbanes</string></p>
#<p align="left" bold="on" italic="off"><string bold="on" italic="off">SECTION
IV. COSPONSORED MEASURES</string></p>
#<p align="left" bold="on" italic="off"><string bold="on"
italic="off">&tab;&tab; ORGANIZED BY COMMITTEE REFERRAL</string></p>
#<p align="left" bold="on" italic="off"><string bold="on"
italic="off">&tab;&tab; SENATE: AGRICULTURE</string></p>
#<p align="left" bold="off" italic="off"></p>
#</header>

elsif ( $line == m/<header/> ) {
    my $i = 0;
    while( $line == <SEN106> ) {
        $line_number++;
        if ( $line == m/<p align=.+>(.+)<\/p>/ ) {
            $h4 = $1;
            $i++;
            if ( $i == 3 && ( $section == 2 || $section == 3 || $section
== 4 ) ) {
                $h4 =~ m/SECTION (.+)\. .+<\/string>/;
                $h5 = $1;
                if ( $h5 eq "III" ) {
                    $committee = 3;
                }
                elsif ( $h5 eq "IV" ) {
                    $committee = 4;
                }
                else {
                    $committee = "";
                }
            }
            elsif ( $i == 5 && ( $committee == 3 || $committee == 4 ) ) {
                $h4 =~ m/SECTION (.+)\. .+<\/string>/;
                $h4 =~ m/&tab;&tab;\s+(.+)<\/string>/;
                $h6_1 = "COMMITTEE";
                $h6_2 = "$1";
                my $ov = $senid . "_" . "$line_number";
                $occurrence_value{ $ov } = "";
                my $len = $#occurrence_committee;
                $occurrence_committee[ $len + 1 ] = [ ( $senid,
$line_number, $committee, $h6_2 ) ];
            }
        }
    }
}
```

FIGURE 36E

```
#-----  
my $ov = $senid . "_" . "$line_number";  
  
$di_value{ $val } = "";  
  
my $len = $date_introduced;  
$date_introduced[ $len + 1 ] = [ ($senid, $line_number, $val) ];  
#-----  
  
if ( $section == 1 || $section == 3 ) {  
    $tempH{$h2}{SPONSOR} = "$senid";  
#-----  
  
    my $ov = $senid . "_" . "-1";  
  
    my $s = $senid;  
    $s =~ s/_/ /g;  
    $s_value{ $s } = "";  
  
    my $len = $sponsor;  
    $sponsor[ $len + 1 ] = [ ($senid, "-1", $s) ];  
#-----  
}  
  
elsif ( $section == 2 || $section == 4 ) {  
    $line = <SEN106>;  
    $line_number++;  
    #  
    <p bold="off" italic="off">SPONSOR: Daschle</p>  
    if ( $line =~ m/<p .+>(.+): (.+)<\p>/ ) {  
        my $mysponsor = $1;  
        my $value = $2;  
        $tempH{$h2}{SPONSOR} = $value;  
#-----  
  
        my $ov = $senid . "_" . "$line_number";  
  
        my $s = $value;  
        $s =~ s/_/ /g;  
        $s_value{ $s } = "";  
  
        my $len = $sponsor;  
        $sponsor[ $len + 1 ] = [ ($senid, $line_number, $s) ];  
#-----  
    }  
}  
  
elsif ( $section == 5 ) {  
#  
    <p>SUBMITTED FOR: S. 4&tab;CONGRESSIONAL RECORD: S1830</p>  
    $line = <SEN106>;  
    $line_number++;  
    if ( $line =~ m/<p>(.+)<\p>/ ) {  
        my $submit = $1;
```

FIGURE 36F

```
my $ov = $senid . "_" . "-1";

my $s = $senid;
$s =~ s/_/_g;
$s_value{ $s } = "";

my $len = $#sponsor;
$sponsor[ $len + 1 ] = [ ($senid, "-1", $s) ];

#-----

$line = <SEN106>;
$line_number++;
if ( $line =~ m/<p>(.+): (.+)</p>/ ) {
    my $submitted_by = $1;
    my $value = $2;

    $tempH{$h2}{SUBMITTED_BY} = $value;
}

#-----

my $ov = $senid . "_" . "$line_number";

my $sb = $value;
$sb =~ s/_/_g;
$sb_value{ $sb } = "";

my $len = $#submitted_by;
$submitted_by[ $len + 1 ] = [ ($senid, $line_number, $sb) ];
;

#-----}
elsif ( $line =~ m/<p align=.+>(.+)</p>/ ) {
    $h3 = $1;
    goto N4;
}
;

elsif ( $section == 6 ) {
    <p>SUBMITTED FOR: S.    4&tab;CONGRESSIONAL RECORD: S1830</p>
    <p>SPONSOR: Murray</p>
    <p>SUBMITTED BY: Bingaman</p>
    $line = <SEN106>;
    $line_number++;
    if ( $line =~ m/<p>(.+)</p>/ ) {
        my $submit = $1;
        my ($part1, $part2) = split(&tab;/, $submit);
        my ($part1_1, $part1_2) = split(/: /, $part1);
        my ($part2_1, $part2_2) = split(/: /, $part2);

        $part1_2 =~ s/\s*/ /g;
        $tempH{$h2}{SUBMITTED_FOR} = $part1_2;
    }
}
;
```

FIGURE 36G

```
#-----
$tempH{$h2}{CONGRESSIONAL_RECORD} = $part2_2;
#-----

$ov = $senid . "_" . "$line_number";

my $cr = $part2_2;
$cr =~ s/ _/g;
$cr_value{ $cr } = "";

$len = $#congressional_record;
##           $congressional_record[ $len + 1 ] = [ ($senid,
$line_number, $cr, $h2) ];
$congressional_record[ $len + 1 ] = [ ($senid,
$line_number, $cr) ];
#-----
}

$line = <SEN106>;
$line_number++;
if ( $line =~ m/<p>(.+): (.+)<\/p>/ ) {
    my $mysponsor = $1;
    my $value = $2;

$tempH{$h2}{SPONSOR} = $value;
#-----

my $ov = $senid . "_" . "$line_number";

my $s = $value;
$s =~ s/ _/g;
$s_value{ $s } = "";

my $len = $#sponsor;
$sponsor[ $len + 1 ] = [ ($senid, $line_number, $s) ];
#-----
}

$line = <SEN106>;
$line_number++;
if ( $line =~ m/<p>(.+): (.+)<\/p>/ ) {
    my $submitted_by = $1;
    my $value = $2;

$tempH{$h2}{SUBMITTED_BY} = $value;
#-----

my $ov = $senid . "_" . "$line_number";

my $sb = $value;
$sb =~ s/ _/g;
$sb_value{ $sb } = "";

my $len = $#submitted_by;
```

FIGURE 36H

```
N4:if ( $h3 eq "COSPONSORS" ) {
#           <p bold="off" italic="off">Edwards; Bayh; Kerry; Bingaman (A-
11/05/1999):</p>
    $line = <SEN106>;
    $line_number++;
    if ( $line =~ m/<p .+>(.+)<\p>/ ) {
        my $mycosponsors = $1;

        if ( ($mycosponsors ne "") && ($mycosponsors ne "NONE") ) {
            $tempH{$h2}{COSPONSORS} = $mycosponsors;
#
#-----.
        my $ov = $senid . "_" . "$line_number";

        my $cs = $mycosponsors;
        $cs =~ s/ /_/g;
        $cs_value{ $cs } = "";

        my $len = $#cosponsors;
        $cosponsors[ $len + 1 ] = [ ($senid, $line_number, $cs) ];
#
#-----.
    }
    else {
        $tempH{$h2}{COSPONSORS} = "NONE";
#
#-----.
        my $ov = $senid . "_" . "$line_number";

        my $cs = $mycosponsors;
        $cs =~ s/ /_/g;
        $cs_value{ $cs } = "";

        my $len = $#cosponsors;
        $cosponsors[ $len + 1 ] = [ ($senid, $line_number, $cs) ];
#
#-----.
    }
    else {
        print LOG "!!! error:$senid:$h2:$h3  COSPONSORS tag !!!!\n";
    }
}

elsif ( $h3 eq "OFFICIAL TITLE" ) {
#           <p bold="off" italic="off">.....</p>
    $line = <SEN106>;
    $line_number++;
    if ( $line =~ m/<p .+>(.+)<\p>/ ) {
        my $title = $1;
        $tempH{$h2}{OFFICIAL_TITLE} = $title;
#
#-----.
        my $ov = $senid . "_" . "$line_number";
    }
}
```

FIGURE 36I

```

        elsif ( $h3 eq "LATEST STATUS" || $h3 eq "STATUS ACTIONS" ) {
#
#           <p bold="off"><string bold="on">Oct 25, 1999&tab; Became Public
# Law No: 106-80.</string></p>
#           <p><string>May 27, 1999&tab; Proposed amendment S.Amdt. 387
# withdrawn in Senate.</string></p>
#           <p><string>May 27, 1999&tab; Proposed by Senator Levin for Senator
# Sarbanes.</string></p>
#
#           <p align="center" italic="off">ABSTRACT</p>
my $cumulative_content = "";
my $i = 0;
my $save_line_number;
while ( $line = <SEN106> ) {
    $line_number++;
    if ( $i == 0 ) { $save_line_number = $line_number; }
    $i++;
    if ( $line =~ m/<p.*><string.*>(.+)</string></p>/ ) {
        my $content = $1;
        $cumulative_content .= "$content CCCRRR "; # replace \n
    }
}
with " CCCRRR "
{
    else {
        if ( $h3 eq "LATEST STATUS" ) {
            $tempH{$h2}{LATEST_STATUS} = $cumulative_content;
        }
        elsif ( $h3 eq "STATUS ACTIONS" ) {
            $tempH{$h2}{STATUS_ACTIONS} = $cumulative_content;
        }
    }
#-----
    my $ov = $senid . "_" . "$line_number";
    if ( $h3 eq "LATEST STATUS" ) {
        my $status = $cumulative_content;
        $status =~ s/ /_/g;
        $ls_value{ $status } = "";
        my $len = $#latest_status;
        $latest_status[ $len + 1 ] = [ ($senid, $line_number,
$status) ];
    }
    elsif ( $h3 eq "STATUS ACTIONS" ) {
        my $status = $cumulative_content;
        $status =~ s/ /_/g;
        $sa_value{ $status } = "";
        my $len = $#status_actions;
        $status_actions[ $len + 1 ] = [ ($senid, $line_number,
$status) ];
    }
#-----
    goto N2;
}

```

FIGURE 36J

```
        }
    }

    elsif ( $h3 eq "ABSTRACT" ) {
        <p italic="off">NONE</p>
        $line = <SEN106>;
        $line_number++;
        if ( $line =~ m/<p.*>(.+)<\/p>/ ) {
            my $abstract = $1;
            $tempH{$h2}{ABSTRACT} = $abstract;
        }
        my $ov = $senid . "_" . "$line_number";
        my $a = $abstract;
        $a =~ s/_/_g;
        $a_value{ $a } = "";
        my $len = $#abstract;
        $abstract[ $len + 1 ] = [ ($senid, $line_number, $a) ];
    }
    else {
        print LOG "!!! error:$senid:$h2:$h3 ABSTRACT tag !!!!\n";
    }
}

elsif ( $h3 eq "STATEMENT OF PURPOSE" ) {
    <p align="center" italic="off">STATEMENT OF PURPOSE</p>
    <p italic="off">...</p>
    OR
    <p align="center" italic="off">ABSTRACT</p>
    OR
    </section>

    $line = <SEN106>;
    $line_number++;
}

my $ov = $senid . "_" . "$line_number";
if ( $line =~ m/<p italic=.+>(.*)<\/p>/ ) {
    my $stmt = $1;
    if ( $stmt eq "" ) {
        $tempH{$h2}{STATEMENT_OF_PURPOSE} = $stmt;
    }
    else {
        $tempH{$h2}{STATEMENT_OF_PURPOSE} = $stmt;
    }
}
my $sop = $stmt;
$sop =~ s/_/_g;
```

FIGURE 36K

```
my $sop = "";
$sop_value{ $sop } = "";

my $len = $#statement_of_purpose;
$statement_of_purpose[ $len + 1 ] = [ ($senid, $line_number,
$sop) ];
#-----
        goto N2;
    }
    else {
        print LOG "!!! error:$senid:$h2:$h3  STATEMENT OF PURPOSE tag
!!!!\n";
    }
}

elsif ( $h3 eq "DIGEST" ) {
#        <p italic="off">NONE</p>
    $line = <SEN106>;
    $line_number++;
    if ( $line =~ m/<p .+>(.+)</p>/ ) {
        my $mydigest = $1;
        $tempH{$h2}{DIGEST} = $mydigest;
#-----
        my $ov = $senid . "_" . "$line_number";

        my $d = $mydigest;
        $d =~ s/ /_/g;
        $d_value{ $d } = "";

        my $len = $#digest;
        $digest[ $len + 1 ] = [ ($senid, $line_number, $d) ];
#-----
    }
    else {
        print LOG "!!! error:$senid:$h2:$h3  DIGEST tag !!!\n";
    }
}

else {
    print LOG "!!! error:$senid:$h2:$h3  UNKNOWN tag !!!\n";
}
} # END WHILE

THEEND:;
$prev_h2 = $h2;

} # comment out foreach loop

my $buff = "";
```

FIGURE 36L

PROCS:

```
if( $inputstr eq "q" )      { goto MYEND; }
elsif( $inputstr eq "b" )    { &print_table( "boa" ); }
elsif( $inputstr eq "a" )    { &print_table( "abstract" ); }
elsif( $inputstr eq "ha" )   { &print_hash( "a_value" ); }
elsif( $inputstr eq "cr" )   { &print_table( "congressional_record" ); }
elsif( $inputstr eq "hcr" )  { &print_hash( "cr_value" ); }
elsif( $inputstr eq "cs" )   { &print_table( "cosponsors" ); }
elsif( $inputstr eq "hcs" )  { &print_hash( "cs_value" ); }
elsif( $inputstr eq "di" )   { &print_table( "date_introduced" ); }
elsif( $inputstr eq "hdi" )  { &print_hash( "di_value" ); }
elsif( $inputstr eq "d" )    { &print_table( "digest" ); }
elsif( $inputstr eq "hd" )   { &print_hash( "d_value" ); }
elsif( $inputstr eq "ls" )   { &print_table( "latest_status" ); }
elsif( $inputstr eq "hls" )  { &print_hash( "ls_value" ); }
elsif( $inputstr eq "sa" )   { &print_table( "status_actions" ); }
elsif( $inputstr eq "hsa" )  { &print_hash( "sa_value" ); }
elsif( $inputstr eq "ot" )   { &print_table( "official_title" ); }
elsif( $inputstr eq "hot" )  { &print_hash( "ot_value" ); }
elsif( $inputstr eq "s" )    { &print_table( "sponsor" ); }
elsif( $inputstr eq "hs" )   { &print_hash( "s_value" ); }
elsif( $inputstr eq "sop" )  { &print_table( "statement_of_purpose" ); }
elsif( $inputstr eq "hsop" ) { &print_hash( "sop_value" ); }
elsif( $inputstr eq "sb" )   { &print_table( "submitted_by" ); }
elsif( $inputstr eq "hsb" )  { &print_hash( "sb_value" ); }
elsif( $inputstr eq "sf" )   { &print_table( "submitted_for" ); }
elsif( $inputstr eq "hsf" )  { &print_hash( "sf_value" ); }
elsif( $inputstr eq "ti" )   { &print_table( "topic_index" ); }
elsif( $inputstr eq "hti" )  { &print_hash( "ti_value" ); }

elsif( $inputstr eq "1" )    { &print_table( "filename_senator" ); }
elsif( $inputstr eq "2" )    { &print_table( "senator" ); }
elsif( $inputstr eq "3" )    { &print_table( "filename_period" ); }
elsif( $inputstr eq "4" )    { &print_table( "prepared_by" ); }
elsif( $inputstr eq "5" )    { &print_table( "occurrence_section" ); }
elsif( $inputstr eq "6" )    { &print_table( "occurrence_committee" ); }
elsif( $inputstr eq "pp" )   { &pretty_print_tables( "106" ); }
else { print "\t\t***** WRONG OPTION *****\n"; }

&print_prompt;
}

MYEND:;

close LOG;
exit;

=====
=====
```

FIGURE 36M

```
print "\t\"d\". digest ..... \"hd\". d_value\n";
print "\t\"ls\". latest_status ..... \"hls\". ls_value\n";
print "\t\"sa\". status_actions ..... \"hsa\". sa_value\n";
print "\t\"ot\". official_title ..... \"hot\". ot_value\n";
print "\t\"s\". sponsor ..... \"hs\". s_value\n";
print "\t\"sop\". statement_of_purpose ..... \"hsop\". sop_value\n";
print "\t\"sb\". submitted_by ..... \"hsb\". sb_value\n";
print "\t\"sf\". submitted_for ..... \"hsf\". sf_value\n";
print "\t\"ti\". topic_index ..... \"hti\". ti_value\n";
print "\t\n";
print "\t\"1\". filename_senator --- \"2\". senator\n";
print "\t\"3\". filename_period --- \"4\". prepared_by\n";
print "\t\"5\". occurrence_section --- \"6\". occurrence_committee\n";
print "\t\n";
print "\t\"pp\". pretty_print (Prolog)---\n";
print " *****\n";
}

sub pretty_print_tables {
    my $sid = $_[0];

    my $DIR = "Prolog/sen_$senid";
    mkdir $DIR, 0755;

    open( PP, ">$DIR/boa.P" ) || die "*ERROR: can't open\n" ;
    &pretty_print( "boa" );
    close PP;

    open( PP, ">$DIR/abstract.P" ) || die "*ERROR: can't open\n" ;
    &pretty_print( "abstract" );
    close PP;

    open( PP, ">$DIR/congressional_record.P" ) || die "*ERROR: can't open\n" ;
    &pretty_print( "congressional_record" );
    close PP;

    open( PP, ">$DIR/cosponsors.P" ) || die "*ERROR: can't open\n" ;
    &pretty_print( "cosponsors" );
    close PP;

    open( PP, ">$DIR/date_introduced.P" ) || die "*ERROR: can't open\n" ;
    &pretty_print( "date_introduced" );
    close PP;

    open( PP, ">$DIR/digest.P" ) || die "*ERROR: can't open\n" ;
    &pretty_print( "digest" );
    close PP;

    open( PP, ">$DIR/latest_status.P" ) || die "*ERROR: can't open\n" ;
    &pretty_print( "latest_status" );
    close PP;

    open( PP, ">$DIR/status_actions.P" ) || die "*ERROR: can't open\n" ;
```

FIGURE 36N

```
open( PP, ">$DIR/statement_of_purpose.P" ) || die "*ERROR: can't open\n" ;
&pretty_print( "statement_of_purpose" );
close PP;

open( PP, ">$DIR/submitted_by.P" ) || die "*ERROR: can't open\n" ;
&pretty_print( "submitted_by" );
close PP;

open( PP, ">$DIR/submitted_for.P" ) || die "*ERROR: can't open\n" ;
&pretty_print( "submitted_for" );
close PP;

open( PP, ">$DIR/topic_index.P" ) || die "*ERROR: can't open\n" ;
&pretty_print( "topic_index" );
close PP;

open( PP, ">$DIR/filename_senator.P" ) || die "*ERROR: can't open\n" ;
&pretty_print( "filename_senator" );
close PP;

open( PP, ">$DIR/filename_period.P" ) || die "*ERROR: can't open\n" ;
&pretty_print( "filename_period" );
close PP;

open( PP, ">$DIR/senator.P" ) || die "*ERROR: can't open\n" ;
&pretty_print( "senator" );
close PP;

open( PP, ">$DIR/prepared_by.P" ) || die "*ERROR: can't open\n" ;
&pretty_print( "prepared_by" );
close PP;

open( PP, ">$DIR/occurrence_section.P" ) || die "*ERROR: can't open\n" ;
&pretty_print( "occurrence_section" );
close PP;

open( PP, ">$DIR/occurrence_committee.P" ) || die "*ERROR: can't open\n" ;
&pretty_print( "occurrence_committee" );
close PP;
}

sub pretty_print {
    my $arg_table = $_[0];

    # digest('quoted strings', ... , ... , ...).

    my $buff = "";
    my @arr = "";
    my $inputstr = "";

    no strict;
```

FIGURE 36O

```
else {
    print PP "\'$aref->[$j]\',";
}
$aref->[$n] =~ s/_/_ /g;

if( $arg_table eq "latest_status" || $arg_table eq "status_actions" )
{
    $aref->[$n] =~ s/ CCCRRR /\n/g;
    my @list = split(/\\n/, $aref->[$n]);
    my $len = $#list;
    my $newstr = "[";
    foreach my $i ( 0 .. $len ) {
        my ($ls_date, $ls_mesg) = split(/&tab;/, $list[$i]);
        $newstr .= "d('$ls_date',";
        $newstr .= "'$ls_mesg')";
        if( $len > 0 && $i < $len ) {
            $newstr .= ", ";
        }
    }
    $newstr .= "]";
    $aref->[$n] = $newstr;
    print PP "$aref->[$n]";
    print PP ")\\n";
}

elsif( $arg_table eq "cosponsors" ) {
#Dodd; Bryan; Leahy; Edwards; Hollings; Breaux (A-02/08/2000):

    if ( $aref->[$n] =~ m/.+:/ ) {
        chop $aref->[$n];
    }
    my @colist = split(//, $aref->[$n]);
    my $newstr = "[";
    foreach my $item (@colist) {
        my $items = "";
        $item =~ m/\\s*(.+)/ && ($items = $1);
        my $co_name = "";
        my $co_amend = "";
#Mikulski (A-11/08/1999)
        if ( $items =~ m/(.+)\((.+)\)/ ) {
            $co_name = $1;
            $co_amend = $2;
            $newstr .= "d('$co_name', '$co_amend'), ";
        }
        else {
            my $cosponsor_val = $items;
            $newstr .= "'$cosponsor_val', ";
        }
    }
    chop $newstr;
    chop $newstr;
    $newstr .= "]";
}
```

FIGURE 36P

```
=====
=====
sub print_bills {
    my $bill;
    my $field;
    foreach $bill ( sort keys %HoH ) {
        print "<bill name=\"$bill\">\n";
        my $flag_NONE = "false";
        foreach $field ( sort keys %{$HoH{$bill}} ) {
            if( $field eq "DATE_INTRODUCED" ) {
                print "
<date_introduced>$HoH{$bill}{$field}</date_introduced>\n";
            }
        }
        #-----
        elsif( $field eq "SPONSOR" ) {
            my $sponsor_val = $HoH{$bill}{$field};
            my $val = "";
            my $print_field;
            $sponsor_val =~ m/^(\d+)/ && ($val = $1);
            if ( $val ne "" ) { # then it's a number
                my $key = $senNUMHash{ $val };
                $print_field = $keypeopleHash{ $key }{ nameURI }; # use of
uninitialized value!!!
                print "      <sponsor>$print_field</sponsor>\n";
            }
            else {
                $sponsor_val =~ s/ //g;
                $sponsor_val = lc $sponsor_val;
                if ( exists( $keypeopleHash{ $sponsor_val } ) ) {
                    $print_field = $keypeopleHash{ $sponsor_val }{ nameURI
};
                    print "      <sponsor>$print_field</sponsor>\n";
                }
                else {
                    print LOG "!!! In print_bills: in SPONSOR section:
keypeopleHash{ $sponsor_val } DOES NOT EXIST!\n";
                    print "      <sponsor>$HoH{$bill}{$field}</sponsor>\n";
                }
            }
        }
        #-----
        elsif( $field eq "COSPONSORS" ) {
            my $cosponsors = $HoH{$bill}{$field};
            if ( $cosponsors =~ m/.+:/ ) {
                chop $cosponsors;
            } #== COMMENT if you want COSPONSOR=NONE to disappear
            print "      <cosponsors>\n";
        }
    }
}
```

FIGURE 36Q

```
if ( $items =~ m/(.+)\((.+)\)\)/ ) {
    $co_name = $1;
    $co_amend = $2;
    my $cosponsor_val = $co_name;
    my $val = "";
    my $print_field;
    $cosponsor_val =~ s/ //g;
    $cosponsor_val = lc $cosponsor_val;
    if ( exists( $keypeopleHash{ $cosponsor_val } ) ) {
        $print_field = $keypeopleHash{ $cosponsor_val
} nameURI );
        print "          <co_name a-
date=\"$co_amend\"$print_field</co_name>\n";
    }
    else {
        print LOG "!!! In print_bills: in COSPONSORS
section: keypeopleHash{ $cosponsor_val } DOES NOT EXIST!\n";
        print "          <co_name a-
date=\"$co_amend\"$co_name</co_name>\n";
    }
}
else {
    my $cosponsor_val = $items;
    my $val = "";
    my $print_field;
    $cosponsor_val =~ s/ //g;
    $cosponsor_val = lc $cosponsor_val;
    if ( exists( $keypeopleHash{ $cosponsor_val } ) ) {
        $print_field = $keypeopleHash{ $cosponsor_val
} nameURI );
        print "
<co_name>$print_field</co_name>\n"
    }
    else {
        print LOG "!!! In print_bills: in COSPONSORS
section: keypeopleHash{ $cosponsor_val } DOES NOT EXIST!\n";
        print "
<co_name>$items</co_name>\n"
    }
}
print "          </cosponsor>\n";
}
print "      </cosponsors>\n";
#      )      === UNCOMMENT if you want COSPONSOR=NONE to disappear
}
elsif( $field eq "OFFICIAL_TITLE" ) {
    print "
<official_title>$HoH{$bill}{$field}</official_title>\n";
}
elsif( $field eq "LATEST_STATUS" ) {
```

FIGURE 36R

```
elsif( $field eq "ABSTRACT" ) {
    print "    <abstract>$HoH{$bill}{$field}</abstract>\n";
}
elsif( $field eq "COMMITTEE" ) {
    my $len = $#{$HoH{$bill}{COMMITTEE}};
    print "    <committees>\n";
    foreach my $i ( 0 .. $len ) {
        print "
<committee>$HoH{$bill}{$field}[$i]</committee>\n";
    }
    print "    </committees>\n";
}
elsif( $field eq "SUBMITTED_FOR" ) {
    print "
<submitted_for>$HoH{$bill}{$field}</submitted_for>\n";
}
elsif( $field eq "CONGRESSIONAL_RECORD" ) {
    print "
<congressional_record>$HoH{$bill}{$field}</congressional_record>\n";
}

#-----
elsif( $field eq "SUBMITTED_BY" ) {
    my $submitted_by_val = $HoH{$bill}{$field};
    my $val = "";
    my $print_field;
    $submitted_by_val =~ s/ / /g;
    $submitted_by_val = lc $submitted_by_val;
    if ( exists( $keypeopleHash{ $submitted_by_val } ) ) {
        $print_field = $keypeopleHash{ $submitted_by_val }{
nameURI };
        print "
<submitted_by>$print_field</submitted_by>\n";
    }
    else {
        print LOG "!!! In print_bills: in SUBMITTED_BY
section: keypeopleHash{ $submitted_by_val } DOES NOT EXIST!\n";
        print "
<submitted_by>$HoH{$bill}{$field}</submitted_by>\n";
    }
}

elsif( $field eq "STATEMENT_OF_PURPOSE" ) {
    print "
<statement_of_purpose>$HoH{$bill}{$field}</statement_of_purpose>\n";
}
elsif( $field eq "DIGEST" ) {
    print "    <digest>$HoH{$bill}{$field}</digest>\n";
}
else {
    print LOG "!!! WRONG TAG:$field !!! in sub: print_bills\n";
}
}
```

FIGURE 36S

```

no strict;

my $len = ${$arg_table} + 1;
print "$arg_table: COUNT=$len\n";
for my $i ( 0 .. ${$arg_table} ) {

    if ( !($i % $MORE_SIZE) && !($i == 0) ) {
        my $percent = ( ($i+1) / $len ) * 100;
        print "--More--";
        printf( "(%1d)", $percent );
        print "\% -- q: to quit\n";
        read(STDIN, $buff, 1);

        for ( my $i = 0; ; read(STDIN, $buff, 1) ) {
            if ( $i == 0 ) { @arr=""; }
            $arr[$i++] = $buff;
            if ( $buff eq "\n" ) {
                $inputstr = join '', @arr;
                chop $inputstr;
                goto NEXT;
            }
            $buff = "";
        }
    }
NEXT:
    if( $inputstr eq "q" ) { goto END_PRINT_TABLE; }

    my $aref = ${$arg_table}[$i];
    my $n = @$aref - 1;
    printf( "\t%5d:", $i );
    for my $j ( 0 .. $n ) {
        print "\t$aref->[$j]";
    }
    print "\n";
}
END_PRINT_TABLE:;
}

sub print_hash {
    my $arg_hash = $_[0];

    no strict;

    my $buff = "";
    my @arr = "";
    my $inputstr = "";

    my $len = scalar keys %{$arg_hash};
    print "$arg_hash Hash: COUNT=$len\n";
    my $i = 0;
    foreach my $key( sort keys %{$arg_hash} ) {

        if ( !($i % $MORE_SIZE) && !($i == 0) ) {

```

FIGURE 36T

```
for ( my $i = 0; ; read(STDIN, $buff, 1) )  {
    if ( $i == 0 ) { @arr=""; }
    $arr[$i++] = $buff;
    if ( $buff eq "\n" ) {
        $inputstr = join '', @arr;
        chop $inputstr;
        goto NEXT2;
    }
    $buff = "";
}
NEXT2:
    if( $inputstr eq "q" ) { goto END_PRINT_HASH; }

    $i++;
    print "\t*$key*\n";
}
END_PRINT_HASH:;
}
=====
=====  
#<section>
#<p fontname="Courier New" fontsize="20"></p>
#<p align="center" fontname="Courier New" fontsize="28" bold="on">UNITED
STATES SENATE</p>
#<p align="center" fontname="Courier New" fontsize="28" bold="on"></p>
#<p align="left" fontname="Courier New" fontsize="48"
bold="on">____</p>
#<p align="left" fontname="Courier New" fontsize="48" bold="on"></p>
#<p align="left" fontname="Courier New" fontsize="48" bold="on">LEGISLATIVE
ACTIVITIES</p>
#<p align="left" fontname="Courier New" fontsize="48"
bold="on">____</p>
#<p align="left" fontname="Courier New" fontsize="48" bold="on"></p>
#<p align="left" fontname="Courier New" fontsize="36" bold="on">THE
HONORABLE</p>
#<p align="left" fontname="Courier New" fontsize="36" bold="on">PAUL S.
SARBANES</p>
#<p align="left" fontname="Courier New" fontsize="36" bold="on">OF
MARYLAND</p>
#<p align="left" fontname="Courier New" fontsize="36" bold="on"></p>
#<p align="left" fontname="Courier New" fontsize="28" bold="on">FOR THE
PERIOD</p>
#<p align="left" fontname="Courier New" fontsize="28" bold="on">JANUARY 06,
1999 TO MARCH 31, 2000</p>
#<p align="left" fontname="Courier New" fontsize="28" bold="on"></p>
#<p align="left" fontname="Courier New" fontsize="48"
bold="on">____</p>
#<p fontname="Courier New" fontsize="20" bold="on"></p>
```

FIGURE 36U

```
#<p fontname="Courier New" fontsize="20" bold="on"></p>
#<p align="left" fontname="Courier New" fontsize="20" bold="on">Prepared
by:</p>
#<p align="left" fontname="Courier New" fontsize="20" bold="on">Senate
Computer Center</p>
#<p align="left" fontname="Courier New" fontsize="20" bold="on">Office of the
Sergeant at Arms</p>
#<p align="left" fontname="Courier New" fontsize="20" bold="on">and</p>
#<p align="left" fontname="Courier New" fontsize="20" bold="on">Committee on
Rules and Administration</p>
#</section>

sub process_header {
    while( $line = <SEN106> ) {
        $line_number++;
        if ( $line =~ m/<p align=.+>(.+)<\p>/ ) {
            $h4 = $1;
            if ( $line =~ m/THE HONORABLE/ ) {

                $line = <SEN106>;
                $line_number++;
                $line =~ m/<p align=.+>(.+)<\p>/;
                $senNAME= $1;
                my $first_line = $line_number;

                $line = <SEN106>;
                $line_number++;
                $line =~ m/OF (.+)<\p>/;
                $state = $1;

                my @senlist = split( / /, $senNAME );
                my $firstname = $senlist[0];
                my $lastname = $senlist[$#senlist];
                my $middlepart = "";
                foreach my $i (1 .. ($#senlist-1)) {
                    $middlepart .= "$senlist[$i] ";
                }
                chop $middlepart;

                $len = $#senator;
                $senator[ $len + 1 ] = [ ($senid, $first_line, $firstname,
$middlepart, $lastname, $state) ];

                $line = <SEN106>;
                $line_number++;
                $line = <SEN106>;
                $line_number++;
            }
        }
    }
}
```

FIGURE 36V

```
$line = <SEN106>;
$line_number++;

$line = <SEN106>;
$line_number++;

while( $line = <SEN106> ) {
    $line_number++;
    if ( $line =~ m/<p align=/ ) {
        goto BEGIN_Prepared_by;
    }
}
BEGIN_Prepared_by:
my $first_line2 = $line_number;
$line =~ m/>(.+)<\p>/;
my $cumulative_content = "$1 ";

$line = <SEN106>;
$line_number++;
$line =~ m/>(.+)<\p>/;
$cumulative_content .= "$1 ";

$line = <SEN106>;
$line_number++;
$line =~ m/>(.+)<\p>/;
$cumulative_content .= "$1 ";

$line = <SEN106>;
$line_number++;
$line =~ m/>(.+)<\p>/;
$cumulative_content .= "$1 ";

my $ov = $senid . "_" . "$line_number";

$len = $#prepared_by;
$prepared_by[ $len + 1 ] = [ ($senid, $first_line2,
$cumulative_content) ];
}
$h4 = $1;
}
elsif ( .$line =~ m/<\p>/ ) {
    goto PH1;
}
}

PH1:
if ( $filename eq "D_1_LARI_S272_106.xml" ) {
```

FIGURE 36W

```
while( $line = <SEN106> ) {
    $line_number++;
    if ( $line =~ m/<\/section>/ ) {
        goto END_process_header;
    }
}
END_process_header:;

# <p><string italic="off" hidden="on">SECTION VII. SUBJECT
INDEX</string>ACADEMIC PERFORMANCE&tab; S.7, S.514, S.564</p>
# <p>ACCESS TO HEALTH CARE&tab; S.6, S.1678, S.1690</p>

sub process_index_old {
    $line =~ m/<p>.+</string>(.+)&tab; (.+)<\/p>/;
    my $subject = $1;
    my $bill_seq = $2;

#<p align="right">Administrative procedure--Department of Health and Human
Services&tab; S.331, S.1327</p>
#<p>AGED&tab; S.10, S.51, S.331, S.391, S.472, S.718, S.784, S.792,</p>
#<p align="right"> S.1023, S.1074, S.1142, S.1327, S.1499, S.1678, S.1760</p>

    N3:while( $line = <SEN106> ) {
        $line_number++;
        if ( $line =~ m/<p.*>(.+)&tab; (.+\d)(.*)<\/p>/ ) {
            my $subject = $1;
            my $bill_seq = $2;
            my $comma = $3;
            # IS THERE A CONTINUATION...
            while ( $comma eq "," ) {
                my $buf = <SEN106>;
                $line_number++;
                $buf =~ m/<p.*>(.+\d)(.*)<\/p>/;
                my $bill_seq = $1;
                my $comma = $2;
                if ( $comma eq "" ) {
                    goto N3;
                }
            }
        }
    }
#<p></p>
    'elsif ( $line =~ m/<p><\/p>/ ) {
    }
    else {
        goto THEEND;
    }
}
# <p><string italic="off" hidden="on">SECTION VII. SUBJECT
INDEX</string>ACADEMIC PERFORMANCE&tab; S.7, S.514, S.564</p>
```

FIGURE 36X

```
#<p align="left" fontname="Courier New" fontsize="20" bold="on">Committee on
Rules and Administration</p>
#</section>
#<section>
#<header>
#<p align="center" fontname="Courier New" fontsize="20"
bold="on"><field><fldinst> PAGE </fldinst><fldrslt><string charstynname="">
#<string fontname="Courier New" fontsize="20"
bold="on">2</string></fldrslt></field></p>
#<p align="right" fontname="Courier New" fontsize="20" bold="on">
#<string fontname="Courier New" fontsize="20" bold="on">Lincoln D.
Chafee</string></p>
#<p align="left" fontname="Courier New" fontsize="20" bold="on"><string
fontname="Courier New" fontsize="20" bold="on">
#<string fontname="Courier New" fontsize="20" bold="on">SUBJECT INDEX TO SPONSORED AND COSPONSORED MEASURES AND
AMENDMENTS</string></p>
#<p align="left" fontname="Courier New" fontsize="20" bold="off"></p>
#</header>
#<p>ACCESS TO HEALTH CARE&tab; S.494</p>
#<p>ACCIDENT PREVENTION&tab; S.149, S.936</p>

sub process_index {

    $line =~ m/<p>.+</string>(.+)&tab; (.+)<\/p>/;
    my $subject = $1;
    my $bill_seq = $2;
    my @bill_list = split( //, $bill_seq );

    my $sub = $subject;
    $sub =~ s/ /_/g;
    $ti_value{ $sub } = "";

    foreach my $item (@bill_list) {
        $item =~ s/\s*/ /g;

        my $len = $#topic_index;
        $topic_index[ $len + 1 ] = [ ($senid, $line_number, $sub,
$item) ];
    }
}

#<p align="right">Administrative procedure--Department of Health and Human
Services&tab; S.331, S.1327</p>
#<p>AGED&tab; S.10, S.51, S.331, S.391, S.472, S.718, S.784, S.792,</p>
#<p align="right"> S.1023, S.1074, S.1142, S.1327, S.1499, S.1678, S.1760</p>

N3:while( $line = <SEN106> ) {
    $line_number++;
    if ( $line =~ m/<p.*>(.+)&tab;(.+\d)(.*).+<\/p>/ ) {
        my $subject = $1;
        my $bill_seq = $2;
        my $comma = $3;
        my @bill_list = split( //, $bill_seq );
```

```
# IS THERE A CONTINUATION...
while ( $comma eq "," ) {
    my $buf = <SEN106>;
    $line_number++;
    $buf =~ m/<p.*>(.+\d)(.*)<\/p>/;
    my $bill_seq = $1;
    my $comma = $2;
    my @bill_list = split( //, $bill_seq );
    foreach my $item (@bill_list) {
        $item =~ s/\s*//g;
        my $len = $#topic_index;
        $topic_index[ $len + 1 ] = [ ($senid,
$line_number, $subject, $item) ];
    }
    if ( $comma eq "" ) {
        goto N3;
    }
}
#<p></p>
elsif ( $line =~ m/<p><\/p>/ ) {
}
else {
    goto THEEND;
}
}
```

FIGURE 36Z

```
<!ELEMENT SLA_collection = (senate_file*)>
<!ELEMENT senate_file = (filename, header_page?, section*, subject_index?)>
<!ELEMENT header_page = (senator?, report_period?, prepared_by?)>
<!ELEMENT senator = (first_name?, middle_part?, last_name?, state?)>
<!ELEMENT report_date = (start_date?, end_date?)>
<!ELEMENT section = (sec_number, sec_name, bar*)>
<!ELEMENT bar = (bill | resolution | amendment)>
<!ELEMENT resolution = (joint_resolution, concurrent_resolution, simple_resolution)>
<!ELEMENT bill = (bar_id, date_introduced, sponsor?, cosponsors?, official_title,
                   (latest_status | status_actions), abstract, committee?)>
<!ELEMENT amendment = (bar_id, date_introduced, submitted_for, congressional_record,
                        sponsor?, submitted_by?, cosponsors,
                        statement_of_purpose, (latest_status | status_actions),
                        abstract)>
```

FIGURE 37

```
#!/usr/local/bin/perl -w
use strict;

# caccf_xml FILE REC_SIZE

my $REC_SIZE = 164;

die "**** Record size must be 164!\n" if ( $ARGV[1] != 164 );

my $rec_count = 0;
my $rec;
my $filesize;

open(IN, "< $ARGV[0]") || die "can't read from: $!";
$ filesize = -s IN;

print "**** WARNING: file size ($filesize) is no multiple of record size
($REC_SIZE)\n";
if ( $filesize % $REC_SIZE != 0 );

open(OUT, "> $ARGV[0].xml") || die "can't write to: $!";
open(LOG, "> $ARGV[0].xml.log") || die "can't write to: $!";

print OUT "<caccf_records>\n";

while (read(IN, $rec, $REC_SIZE) == $REC_SIZE) {
    print OUT "<rec no=\"", ++ $rec_count, "\" ";
    print OUT "ms=\"", substr($rec, 0, 1), "\" ";
    print OUT "cc=\"", substr($rec, 1, 2), "\" ";
    print OUT "tc=\"", substr($rec, 3, 2), "\" ";
    print OUT "rn=\"", substr($rec, 5, 5), "\" ";
    print LOG "**** ERROR, >", (substr($rec, 10, 1)), "< instead of blank in #11,
rec $rec_count:\n[$rec]\n";
    if (substr($rec, 10, 1) ne " ") {
        print OUT "na=\"", substr($rec, 11, 28), "\" ";
        print OUT "dp=\"", substr($rec, 39, 4), "\" ";
        print OUT "sn=\"", substr($rec, 43, 9), "\" ";
        print OUT "mg=\"", substr($rec, 52, 4), "\" ";
        print OUT "pg=\"", substr($rec, 56, 2), "\" ";
        print OUT "dd=\"", substr($rec, 58, 8), "\" ";
        print OUT "hc=\"", substr($rec, 66, 20), "\" ";
        print OUT "hs=\"", substr($rec, 86, 2), "\" ";
        print OUT "oc=\"", substr($rec, 88, 5), "\" ";
        print OUT "db=\"", substr($rec, 93, 8), "\" ";
        print OUT "rc=\"", substr($rec, 101, 1), "\" ";
        print OUT "ai=\"", substr($rec, 102, 1), "\" ";
        print OUT "ra=\"", substr($rec, 103, 1), "\" ";
        print OUT "re=\"", substr($rec, 104, 2), "\" ";
        print OUT "le=\"", substr($rec, 106, 2), "\" ";
        print OUT "ma=\"", substr($rec, 108, 1), "\" ";
        print OUT "se=\"", substr($rec, 109, 1), "\" ";
    }
}
```

FIGURE 38

```
#!/usr/local/bin/perl -w
use strict;

# caccf2oracle FILE REC_SIZE

my $REC_SIZE = 164;

#die "**** Record size must be 164!\n" if ( $ARGV[1] != 164 );

my $rec_count = 0;
my $rec;
my $fsize;

my %month = ("01" => "JAN",
              "02" => "FEB",
              "03" => "MAR",
              "04" => "APR",
              "05" => "MAY",
              "06" => "JUN",
              "07" => "JUL",
              "08" => "AUG",
              "09" => "SEP",
              "10" => "OCT",
              "11" => "NOV",
              "12" => "DEC" );

sub mm_dd_yy {
    my ($a_date) = @_;
    if ($a_date =~ m|([0-9]{2})/([0-9]{2})/([0-9]{2})| ) {
        return "TO_DATE('$2-$month{$1}-19$3')";
    } else {
        print "**** ERROR    Rec #$rec_count, mm_dd_yy, not a date >>>$a_date<<<\n";
        return "NULL";
    }
};

sub yymmdd {
    my ($a_date) = @_;
    if ($a_date =~ m|([0-9]{2})([0-9]{2})([0-9]{2})| ) {
        "TO_DATE('$3-$month{$2}-19$1')";
    } else {
        print "**** WARNING Rec #$rec_count, yymmdd, not a date >>>$a_date<<<\n";
        return "NULL";
    }
};

sub escapeQuote {
    my ($a_string) = @_;
    if ($a_string =~ s/\\\'\\\'/g) {
        print "**** NOTE    Rec #$rec_count, quote escaped >>>$a_string<<<\n";
    }
    return $a_string;
}
```

FIGURE 39A

39A

39B

```
open(OUT, "> $ARGV[0].sql") || die "can't write to: $!";  
open(LOG, "> $ARGV[0].sql.log") || die "can't write to: $!";  
  
while (read(IN, $rec, $REC_SIZE) == $REC_SIZE) {  
    print OUT "insert into CACCF values (";  
    print OUT "++ $rec_count , ','; # internal record number  
    print OUT "''", substr($rec,0,1), "','; # ms  
    print OUT "''", substr($rec,1,2), "','; # cc  
    print OUT "''", substr($rec,3,2), "','; # tc  
    print OUT "''", substr($rec,5,5), "','; # rn  
    print OUT "''", escapeQuote(substr($rec,11,28)), "','; # na  
    print OUT "''", substr($rec,39,4), "','; # dp  
    print OUT "''", substr($rec,43,9), "','; # sn  
    print OUT "''", substr($rec,52,4), "','; # mg  
    print OUT "''", substr($rec,56,2), "','; # pg  
    print OUT mm_dd_yy(substr($rec,58,8)), "','; # dd  
    print OUT "''", escapeQuote(substr($rec,66,20)), "','; # hc  
    print OUT "''", substr($rec,86,2), "','; # hs  
    print OUT "''", substr($rec,88,5), "','; # oc  
    print OUT mm_dd_yy(substr($rec,93,8)), "','; # db  
    print OUT "''", substr($rec,101,1), "','; # rc  
    print OUT "''", substr($rec,102,1), "','; # ai  
    print OUT "''", substr($rec,103,1), "','; # ra  
    print OUT "''", substr($rec,104,2), "','; # re  
    print OUT "''", substr($rec,106,2), "','; # le  
    print OUT "''", substr($rec,108,1), "','; # ma  
    print OUT "''", substr($rec,109,1), "','; # se  
    print OUT "''", substr($rec,110,1), "','; # ci  
    print OUT "''", substr($rec,111,1), "','; # pp  
    print OUT yymmdd(substr($rec,112,6)), "','; # dt  
    print OUT "''", substr($rec,118,1), "','; # lr  
    print OUT "''", substr($rec,119,3), "','; # br  
    print OUT "''", substr($rec,122,2), "','; # ag  
    print OUT "''", substr($rec,124,1), "','; # sc  
    print OUT "''", escapeQuote(substr($rec,125,29)), "','; # co  
    print OUT "''", escapeQuote(substr($rec,154,2)), "','; # ty  
    print OUT "''", escapeQuote(substr($rec,156,2)), "','; # pc  
    print OUT "''", substr($rec,158,2), "','; # mc  
    print OUT "''", substr($rec,160,2), "','; # pr  
    print OUT "''", substr($rec,162,2), "','; # fl  
    print OUT ");\n";  
};  
  
print LOG "[ARGV[0]: read ",$rec_count*$REC_SIZE, " bytes = $rec_count  
records x $REC_SIZE]\n";  
  
print LOG "*** WARNING: file size = $filesize\n"  
if ( $rec_count*$REC_SIZE != $filesize );
```

FIGURE 39B

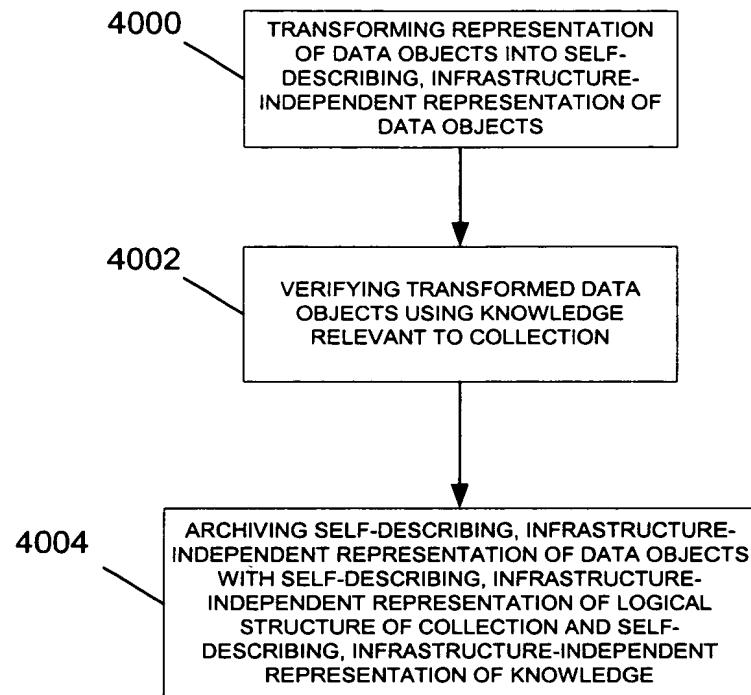


FIGURE 40

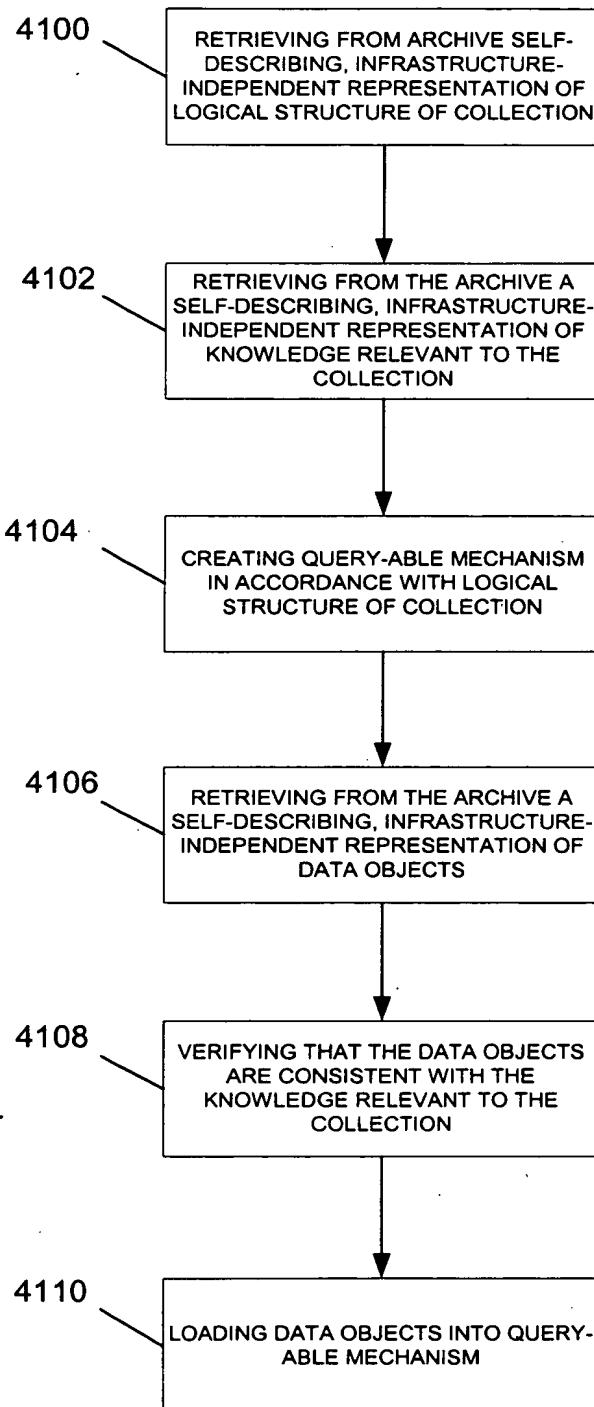


FIGURE 41A

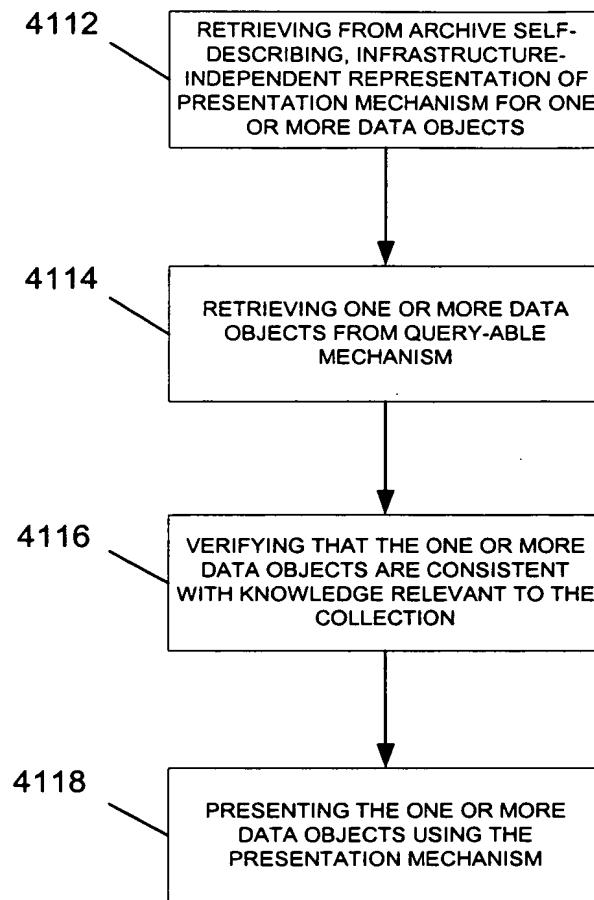


FIGURE 41B

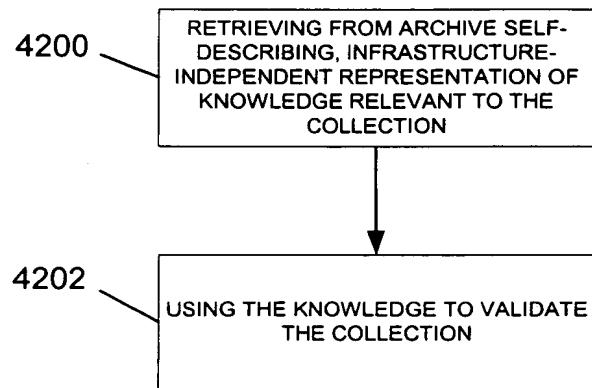


FIGURE 42

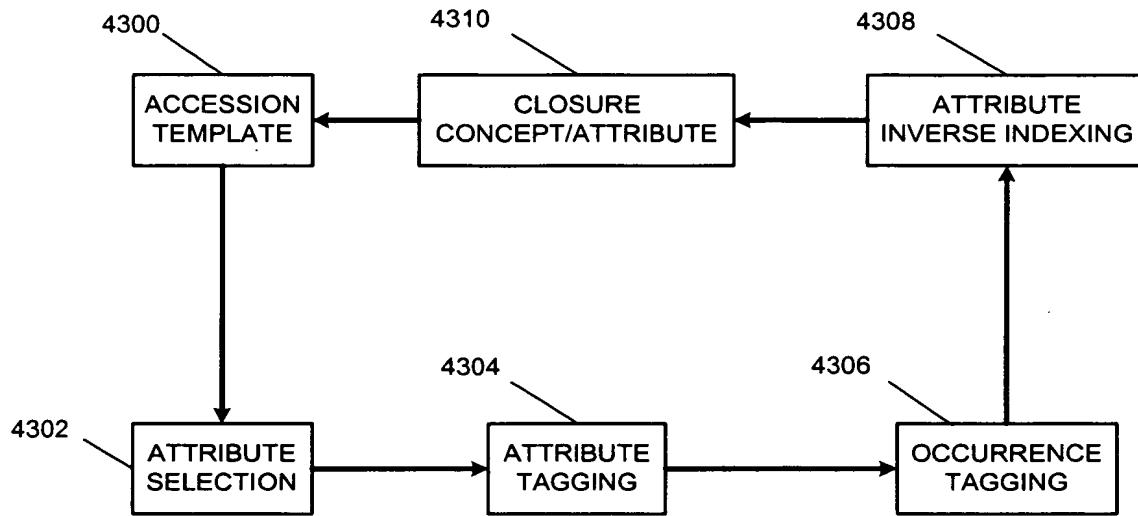


FIGURE 43

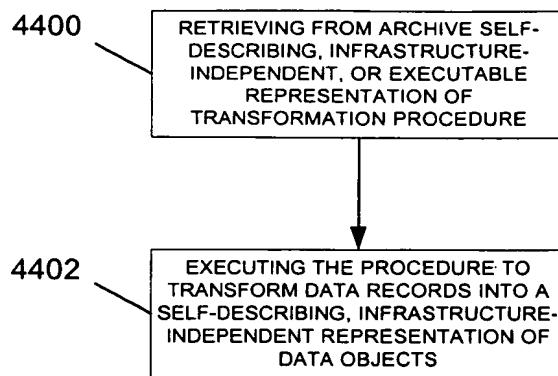


FIGURE 44A

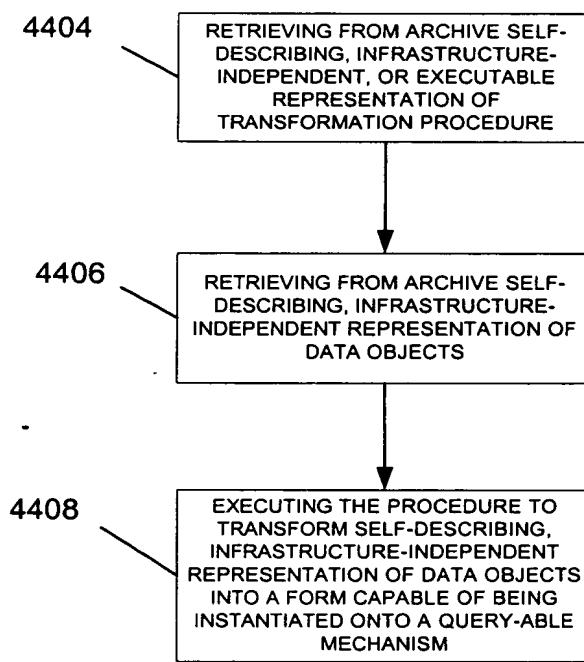


FIGURE 44B

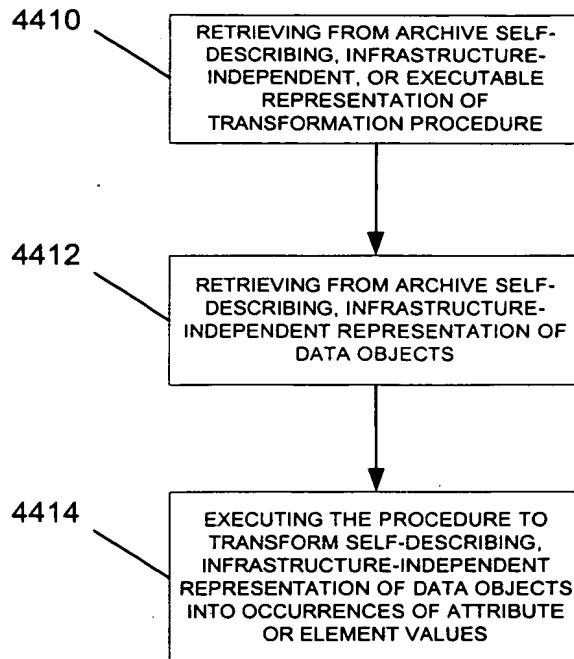


FIGURE 44C

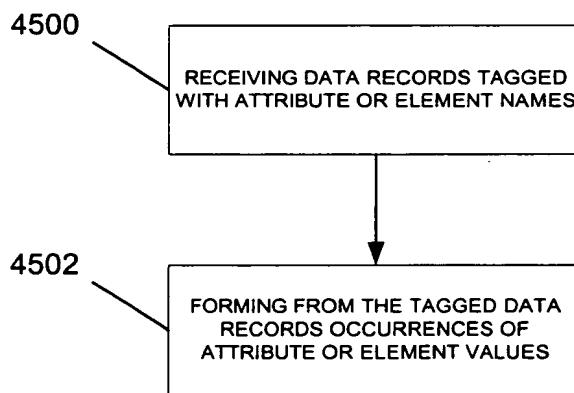


FIGURE 45

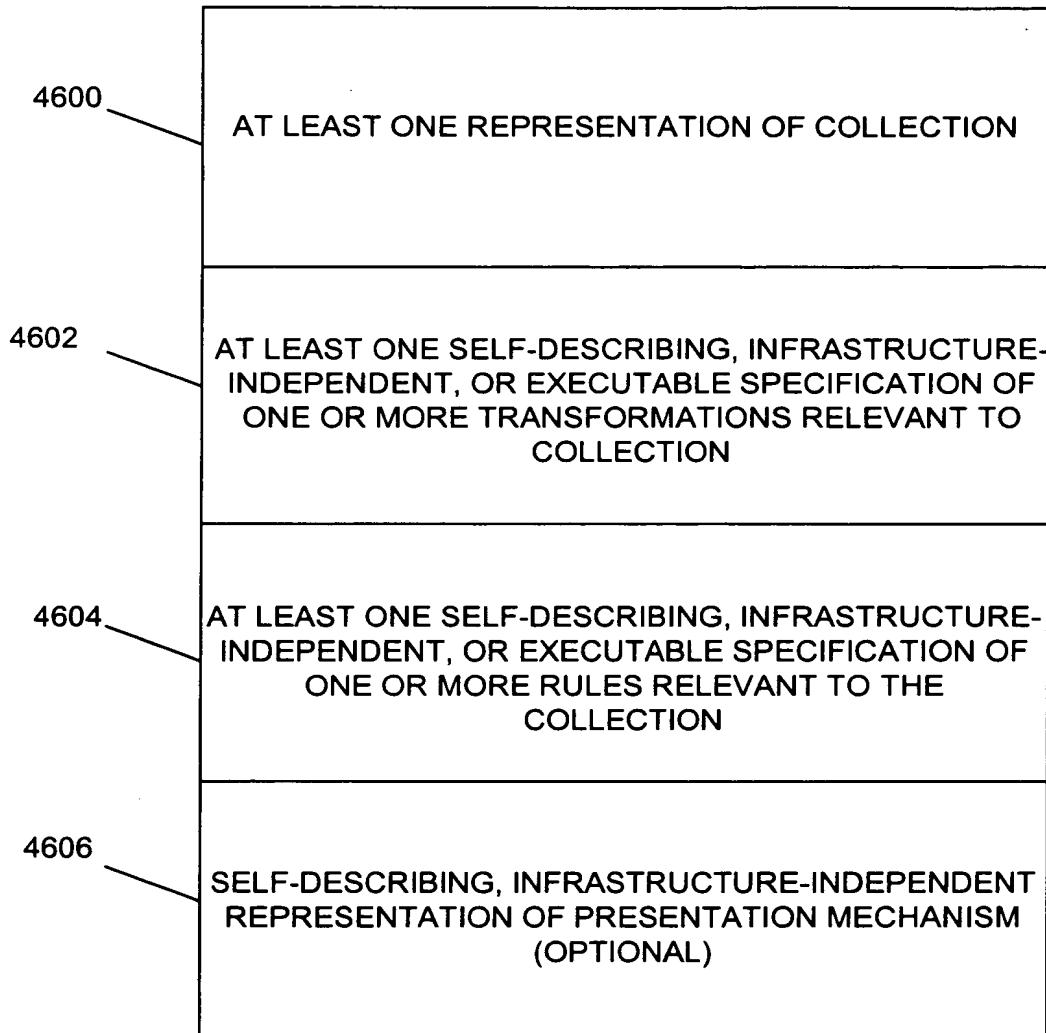


FIGURE 46

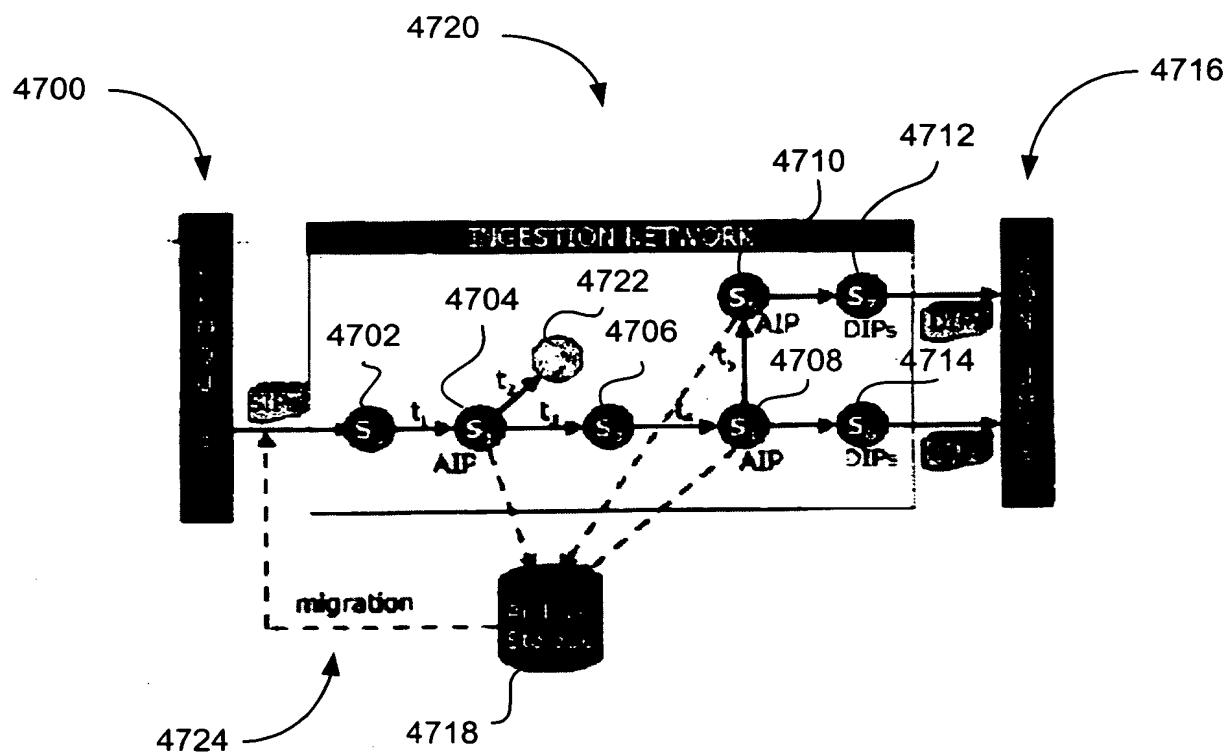


FIGURE 47

| | | |
|------|--|---|
| 4800 | <pre>%%% Rules for (!ELEMENT X (Y,Z)) false ← P:X, not (P.1):Y. false ← P:X, not (P.2):Z. false ← P:X, not P[_→_]. false ← P:X[N→_], not N=1, not N=2.</pre> | <pre>% 1st child is not Y % 2nd child is not Z % there are no children % there are other children</pre> |
| 4802 | <pre>%%% Rules for (!ELEMENT X (Y Z)) false ← P:X[1→A], not A:Y, not A:Z false ← P:X, not P[_→_]. false ← P:X[N→_], not N=1.</pre> | <pre>% 1st child other than Y or Z % there are no children % a non-1st child</pre> |
| 4804 | <pre>%%% Rule for (!ELEMENT X (Y)*) false ← P:X[_→C], not C:Y.</pre> | <pre>% a non-Y child</pre> |

FIGURE 48

PERSISTENT ARCHIVES
Inventors: Reagan W. Moore, et al.
Howrey Docket No. 02737.0004.NPUS01
113/118

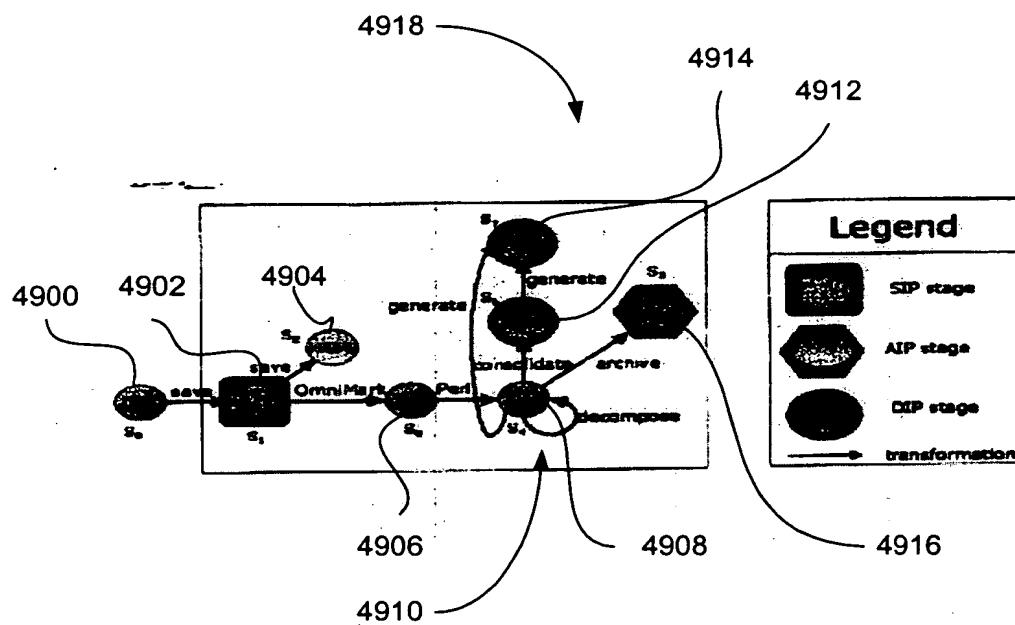


FIGURE 49

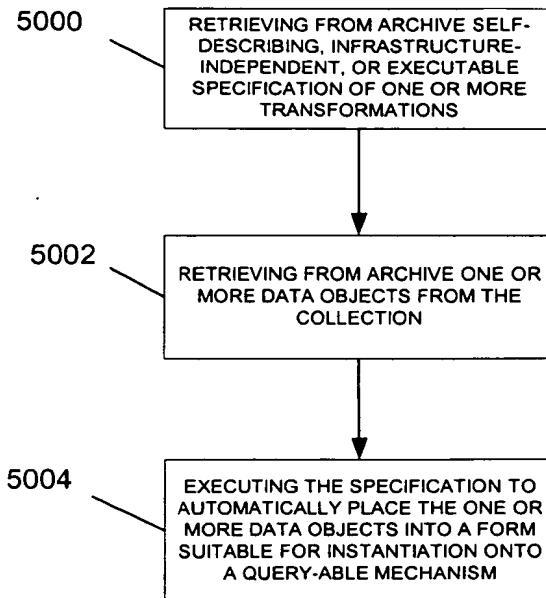


FIGURE 50

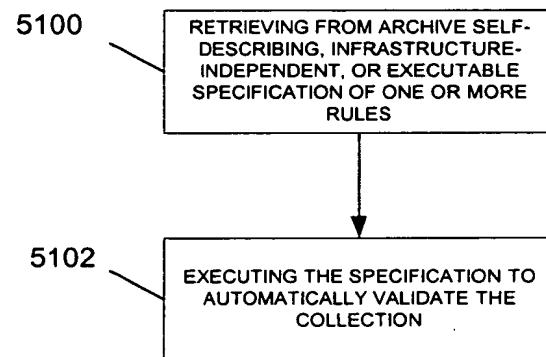


FIGURE 51A

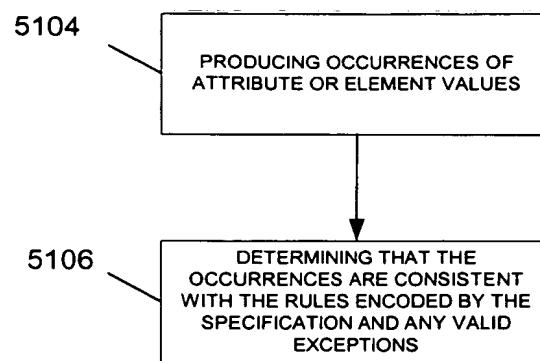


FIGURE 51B

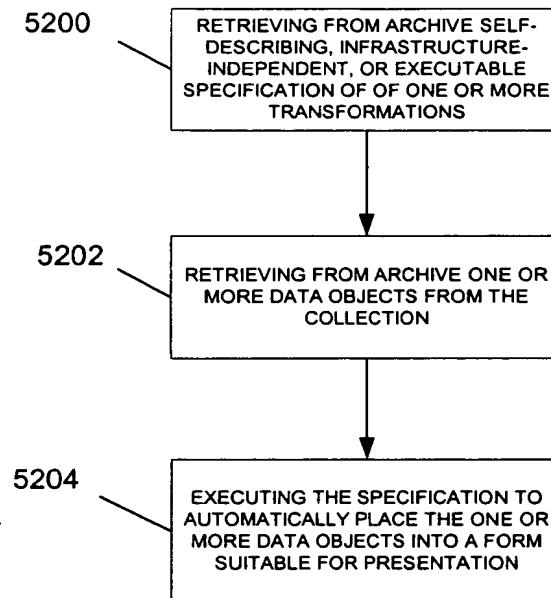


FIGURE 52

#-----
An excerpt of an example of a Topic Map for the SLA (Senate)
Collection.

4 Topics are shown: t1, t2, t3, and t4 of type "SubjectEntry"
--> These are actually Subject Index Entries found in the
raw data

For each topic, there is an occurrence list of locator elements
corresponding to the bills that discuss that topic.

In addition, topics are related to each other through associations.
Here we created two types of associations:
<assoc types="CoDiscussedInExactlyOneBill">
<assoc types="CoDiscussedInTwoOrMoreBills">

showing the "degree of connectedness" between two topics.
These would be value-added relationships, as they are implicit
in the raw data, and discovered by our topic map building
routines.

Bertram Ludaescher & Richard Marciano -- March 20, 2001
#-----

```
<!DOCTYPE topicmap [  
<!ELEMENT topicmap (topic | assoc)*>  
<!ELEMENT topic (topname | occurs)*>  
  <!ATTLIST topic  
    id ID #REQUIRED  
    types CDATA #IMPLIED  
  >  
<!ELEMENT topname (basename, dispname, sortname)>  
  <!ELEMENT basename (#PCDATA)>  
  <!ELEMENT dispname (#PCDATA)>  
  <!ELEMENT sortname (#PCDATA)>  
  <!ELEMENT occurs (locator*)>  
  <!ELEMENT locator EMPTY >  
    <!ATTLIST locator  
      role CDATA #REQUIRED  
      href CDATA #REQUIRED  
    >  
<!ELEMENT assoc (assocrl*)>  
  <!ATTLIST assoc  
    types CDATA #IMPLIED  
  >  
<!ELEMENT assocrl EMPTY >  
  <!ATTLIST assocrl  
    role CDATA #REQUIRED  
    href CDATA #REQUIRED  
  >  
]>
```

54A
54B
54C

FIGURE 54A

```
<topicmap>
<topic id="t1" types="SubjectEntry">
  <topname>
    <basename>Apartment houses</basename>
    <dispname>Apt. Houses</dispname>
  <sortname>APARTMENTHOUSES</sortname>
  </topname>
  <occurs>
    <locator role="DiscussedIn" href="#S.463" />
    </occurs>
  </topic>

<topic id="t2" types="SubjectEntry">
  <topname>
    <basename>Children</basename>
    <dispname>Child.</dispname>
  <sortname>CHILDREN</sortname>
  </topname>
  <occurs>
    <locator role="DiscussedIn" href="#S.300" />
    <locator role="DiscussedIn" href="#S.463" />
    <locator role="DiscussedIn" href="#S.1638" />
    <locator role="DiscussedIn" href="#S.1673" />
    <locator role="DiscussedIn" href="#S.1709" />
    <locator role="DiscussedIn" href="#S.Res.125" />
    <locator role="DiscussedIn" href="#S.Res.258" />
    </occurs>
  </topic>

<topic id="t3" types="SubjectEntry">
  <topname>
    <basename>Welfare</basename>
    <dispname>Welf.</dispname>
  <sortname>WELFARE</sortname>
  </topname>
  <occurs>
    <locator role="DiscussedIn" href="#S.463" />
    <locator role="DiscussedIn" href="#S.1277" />
    <locator role="DiscussedIn" href="#S.1709" />
    <locator role="DiscussedIn" href="#S.Con.Res.28" />
    <locator role="DiscussedIn" href="#S.Res.125" />
    <locator role="DiscussedIn" href="#S.Res.260" />
    </occurs>
  </topic>
```

FIGURE 54B

```
<topic id="t4" types="SubjectEntry">
  <topname>
    <basename>Youth employment</basename>
    <dispname>Youth empl.</dispname>
    <sortname>YOUTEMPLOYMENT</sortname>
    </topname>
    <occurs>
      <locator role="DiscussedIn" href="#S.463" />
    </occurs>
  </topic>

  <assoc types="CoDiscussedInExactlyOneBill">
    <assocrl role="DiscussedInSameBill" href="t1" />
    <assocrl role="DiscussedInSameBill" href="t2" />
    <assocrl role="DiscussedInSameBill" href="t3" />
    <assocrl role="DiscussedInSameBill" href="t4" />
  </assoc>

  <assoc types="CoDiscussedInTwoOrMoreBills">
    <assocrl role="DiscussedInSameBill" href="t2" />
    <assocrl role="DiscussedInSameBill" href="t3" />
  </assoc>
</topicmap>
```

FIGURE 54C